The Builder.

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A Few Facts relative to the Fall of Rain.

CORRECT notions about rain, how it falls, in proportion to seasons and time, and how it flows off the ground, must be of the utmost importance to young engineers and architects. Parliamentary committees are capital schools in which to study human nature, as various forms of evidence may be listened to, and much truth may be learned; but the student must possess patience and perseverance to continue his researches over many sessions. The evidence of 1840 is modified before 1850, and almost reversed in 1860. Howard had studied, written, and published his works "On Climate," and Dalton had given the results of his experience in meteorology before 1840; but few of our then young hydraulic engineers had learned fully the truths taught. Rain-gauges were put up, water-gauges were put down, and independent results obtained during one or more years (seldom exceeding three), and then "averages" were struck to form data to work from. Compensations, in water, were demanded by mill-owners, and enforced by rival engineers, and were granted by Parliament, far greater than can be given. Nature, it is true, is one grand system of averages, but on a scale so colossal as to set at defiance the puny efforts of the engineer to equalize her differences for human purposes. Man cannot control Nature in her grand modes, and can only slightly modify her in her minor operations.

If we look at this world as a whole, we have, year by year, the same amount of sunshine and heat, the same extent of evaporation and cloud, and the same volume of rain falling back to the earth. If there is any modifying influence within or beyond the range of the earth's orbit, we, as yet, know nothing of it. The moon, the planets, and comets, are not thought now to regulate seasons: the influence of the moon on tides is allowed: its influence on the weather is disputed. The world has known many changes of climate during former geological periods, when a different arrangement of land and water prevailed. Area and elevation of dry land control climate, and modify the fall of rain; but the sublime "law of chance" gives difference to the seasons,—that is, given a number of elements which allow of variety in combination; and perfect regularity would be much more wonderful than variety. We have the light and heat of the sun, for anything we know to the contrary, constant quantities; the areas of the oceans and other waters much the same, and the equatorial currents of air; mountain ranges and vast plains, uniform and fixed, so far as concern man. Vapour rises over the entire area, acted on by the sun's rays: clouds are, however, local; the products in vapour of large areas being condensed over much smaller areas. The greatest storm only covers a mere speck of the earth's surface, as compared with the whole; and, during the time foul weather prevails in any place, fine weather also prevails over a much larger area. Universal fine weather, or universal foul weather, cannot exist; but there may be continued storms over a small section of the earth's surface, out of proportion, for a time, to that which is due to area and climate alone; but we may rest satisfied Nature does not suffer. There may be great falls of rain and vast damage from floods in parts of America during one year, and at the same time great drought and heat over Europe. Portions of Africa may suffer from too much wet, and other portions from too much drought. The south and west of England may be dry, the north and east wet, and so of smaller areas: weather is ever local, and rain singularly so. All excesses have, for a time, a sustaining power. The explanation would be a long story, but we may accept the fact. Wet years and seasons generally follow each other, and so of dry years and seasons. Unreflecting people jump to a conclusion that Nature has become permanently wrong, and set about guessing out some trifling infinitesimal cause: they are not aware that the grand and solemn operations of Nature throughout the world are going on evenly and equably, and that it is only poor puny man who observes an infinitesimal microscopic difference in small places. The plains of a portion of Europe may be deluged, and portions of America may be scorched, during one year, but there is no such thing as a general deluge or a general drought over all parts of the earth at the same time.

But to return to local falls of rain, there probably never has been a perfect rain gauge, and probably there never will be one which is perfect: the best rain-gauges give, however, results near enough to the truth for practical purposes. Elevation above the sea-level gives different results as to rain, and places, a few miles apart, may have not only casual but important permanent differences. As to years, Howard, by observations near London over forty years, found that the first six months of the year must be considered "dry months," the last six months "wet months." April is the driest month, October the wettest month; the old proverb as to "April showers" is, therefore, wrong in one sense. The fall of rain in years varies about as 1 to 2.

Fall of Rain near London.

1802,	annual fall,	13·946 inches.
1810,	„	27·510 „
1812,	„	27·240 „
1816,	„	32·370 „

We see by these figures that the proportions betwixt 1802 and 1816 are much more than as 1 to 2. How is an engineer to strike averages for water-works compensations in such cases?

Proportions due to Seasons.

Winter	5·868 inches.
Spring	4·813 „
Summer	6,682 „
Autumn	7·441 „
	24·804 annual.

The mean of rain-fall near London is 25 inches; the mean for all England, 31¼ inches. It is important to know "the mean" rain-fall and the mean temperature at any place, but it is much more important to know the extremes, and to study these. Extremes are actual: means serve for purposes of comparison.

In Keswick the average fall of rain is 67½ inches; in Upminster, Essex, the average fall is 19½ inches. There is said to be no month in England without some rain, but there are several months continuously without any fall of rain available for water supply. More rain may fall within one hour than is due to one month, and more water will flow off the ground in a few hours than flows off the same ground during an average of months. If the flow of water in English rivers and streams, during dry seasons, is taken to represent *one*, in volume, then the wet weather volume is ordinarily 300, and an extreme excess mounts up to 500, taking time into account. How is an engineer to average such excesses? Some of our rivers in England are raised, vertically, by floods, the result of rain, as much as 23 feet. In South Africa and in America some of the rivers are swelled 60 and 70 feet vertically during wet seasons. To average the flow of water down such rivers for engineering purposes would be most fallacious. For water-works we must know the minimums; for bridges, culverts, and river embankments we must know the maximums, and guard against such. "*Averages*" are of no use in such cases.

The flow of water from any surface is modified by previous weather, and by the fall of rain. A dry surface absorbs and evaporates; a wet surface passes almost the whole fall of rain to the streams. There are parts of England in which, during twenty months continuously, no rain fell which was available for water supply; that is, upwards of 600 continuous days. How is an engineer to average such seasons?

In 1847 several important Water Acts were passed,—Manchester, Liverpool, and some others. Two-thirds of the rain-fall were supposed to leave the ground, and one-third of this was said to be due for water compensation. An "average of seasons" was considered equitable; and, under these false notions, works have been executed (we dare not say completed). In the cases of Liverpool and Manchester, the amount of compensation promised is found, in practice, to be more than is due, and an intolerable burden upon the ratepayers. We have shown that years and seasons vary in a proportion as one is to two, and yet Parliament secures to mill-owners, at the cost of the towns, a fixed and constant volume of water several times (four or five times) in excess of the dry-weather flow of the streams; and this has been done by the aid of the engineers, who now find that they are "hoist by their own petard," they are victims of their own want of experience and reflection. "Averages" seem so fair in theory, but are found to be so unfair in practice. The driest year and season, and the driest period of such year and season, are the only true tests for any waterworks burthened with water-compensations. "Averages," to be equitable, must be based on data so obtained. It is monstrous to fix ruinous penalties on town communities for failure in such cases as we have instanced. Water is the great necessary of life: there cannot be health without a constant and full use of it; and the comfort, health, and lives of vast communities ought to receive more consideration from Parliamentary committees in settling water-compensations than they have hitherto had. There are several large towns in difficulties by being overburthened with excessive water-compensations: rights have been, however, granted to mill-owners; and, in the case of Manchester, large sums of money have been paid in lieu of water, and larger sums may have to be paid. If engineers and architects deal in "averages," it behoves them to know and fully to understand what it is they are averaging.

PROGRESS OF THE METROPOLITAN MAIN-DRAINAGE.

FROM recent inspection of the works of the Northern High-level Sewer, both at Old Ford and along the line, we are able to state that fully three-fourths of the contract work are completed, and that there will be no difficulty in finishing the remainder within a period of about two months after the time originally named. The work appears, in every respect, creditable to Mr. Moxon, and to the officers of the Metropolitan Board, of whom we shall do right to name the resident engineer for this portion of the Main-drainage,—Mr. Edmund Cooper, who is District Engineer for the Eastern Division of London. The works at Old Ford, comprising the overflow and penstock-chambers, and four channels therefrom to the Lea,—that is to say, two upper lines for the High-level and Middle-level Sewers, which will cross the Lea by an aqueduct, and two lower lines for the storm-water outfalls into the Lea, have been completed, with the exception of one portion of the length of the upper channels, and a short portion of that of all four channels at the point where the line of the railway crosses that of the sewer or sewers. The ground near the Lea—was very bad, and large quantities of concrete have been required for durable foundation. Fortunately, the apprehensions we expressed, at the time of the strike, respecting the influx of water from upland floods, have not been realized. There have been several high tides; but the coffer-dam, constructed with a less amount of material and labour than works of this kind are generally thought to require, has stood well. Having, in our last year's and the previous volume, given particulars of the works, it is necessary here to do little more than add that the original drawings and specification have

been adhered to, with some exceptions not affecting the accuracy of chief dimensions or the general description.

The most important division of the works near Old Ford is that at the commencement (just west of the railway) of the four channels already mentioned, and point of junction of the Middle-level line with the High-level sewer. The provision here in the penstock-chambers and overflow-chambers, is made for contingencies which will probably not arise for many years to come; and the quality of the brickwork in Portland cement, and the massiveness of the blocks of Bramley Fall stone in copings, cut-waters, and other parts exposed to wear, are as well calculated for endurance as they are perchance for the astonishment of that New Zealand antiquary who in the year two-thousand and odd, may pursue researches into the sewerage contrivances of us Romans of the nineteenth century. Our readers may do well, if they can procure permission and a light, to anticipate these researches by their own; for, before many weeks have elapsed, we should say, the waters of the high-level may be gurging in and on, and like "the king of dykes," Fleet Ditch,

> ". . . than whom no sluice of mud,
> With deeper sable blots the silver flood,"

rolling,—

> ". . . with disemboguing streams,
> . . the large tribute of dead dogs to Thames;"

or, like the cloacæ as described by Pliny, "sometimes huge pieces of stone and timber" carried in the current *without detriment to the fabric*; and saying haply in the music of their waters,—

> "Here strip, my children, here at once leap in,
> Here prove who best can dash through thick and thin,
> And who the most in love of dirt excel,
> Or dark dexterity of groping well.
> Who flings most filth, and wide pollutes around
> The streams, be his the weekly journals bound;
> A pig of lead to him who dives the best,
> A peck of coals a-piece shall glad the rest."

Without repeating other particulars, it may be well to mention here that the overflow chamber, 138 feet in length, is about half of it formed with a peculiar arrangement of weir-walls, parallel with the length of the sewer, over which weirs the water will fall into the storm-water outlet channels below, should it rise high enough—an event, as we have said, not likely to occur till some years hence, when a larger area of drainage in northern London will have its outfall by way of this sewer. Of the length, 70 feet, where the particular arrangement occurs, the breadth, 40 feet 6 inches in the clear, is first to be considered as divided and arched over in two unequal spans, namely, one of 25 feet 3 inches, and the other of 15 feet 9 inches: then, the latter portion of the double chamber, or that opposite to the line of the Middle-level sewer, has a weir along one side; whilst the former, or larger portion, opposite the line of the High-level, has four such weirs, by reason of a division of the line of sewage-flow into two trough-shaped channels, and arrangement for overflow along the middle as well as both sides. Each trough-shaped channel, in the High-level portion, is 5 feet 6 inches in width and 9 feet in depth, with the sides of 14-inch brickwork coped with the Bramley Fall stone, and with flooring like that of the storm-water channels below, of a double course of 3-inch York stone landings, neatly fitted with rubbed joints, and laid, breaking joint, in Portland cement. The space along the centre of this overflow-chamber of the northern line, for the fall of the water, is on plan 2 feet 6 inches in width between the weir walls, and about 60 feet in length, and the spaces along the sides are of similar dimensions, the required counterforts being formed across in brickwork; and the arrangement of the weir along one side of the chamber for the Middle-level sewage is precisely similar. There is a junction between the Northern and Middle-level sewers, at the penstock chambers, immediately above the chambers we have been describing, and also below them, in order that there may be the best mutual provision against the larger volume in one case, of the sewage, and the more sluggish flow in the other. The Wick-lane Branch, which forms part of the same contract, though belonging properly to the Low-level sewerage, is only commenced. It has a dip under the storm-water outlet channels; and into these there will be an escape in storms. Thus, the relief for storm-waters will be in the case of the Northern and Middle-level sewage, downwards, the ordinary flow being forwards; whilst in the case of the Wick-lane Branch the reverse will be the arrangement, as in the case of the Southern High-level sewer at Deptford.

The completed portion of the main line of the Northern High-level now extends across Victoria-park and Hackney, and along Amherst-road and Rectory-road to Stoke Newington. But the works commence again from Stamford-hill, where High-street crosses the Hackney-brook; they are completed up to the private property, and also for some distance on the other side along Manor-road: they are again resumed from the Green-lanes, and are being extended towards the New River; whilst farther on, the tunnelling under the Great Northern Railway is in progress, as well as that near the Junction-road, Kentish-town. Thus, much of what remains to be done is little more than an ordinary barrel-sewer of 6 to 4 feet, in 9-inch brickwork, instead of one 12 feet in width and 9 feet 6 inches in height, with arch and invert of two bricks and side-walls 2½ bricks thick.

The works having been commenced at several points, great care of course has been required to keep the gradients and in checking the levels from time to time. To get the permanent foundation, the ground, where good, is first dug out to the form of the invert as nearly as possible, and then made up as required accurately, with concrete, to a mould or tramel, moved as the work advances,—additional concrete being needed where the foundation otherwise would be bad. The difficulties of the work of this sewer, however, are slight compared with those which will shortly be apparent in the construction of the lines through central London, or through the Low-level districts. The worst ground yet met with for work in trenches, has been that in the Rectory-road. Here the trenches were perhaps 30 to 40 feet in depth, the upper portion through running sand, and opened no greater width than that of the sewer, with perpendicular sides, held up in the usual manner, by closely-set boarding and cross-strutting. Much of the timber in such cases has to be left in, when the trenches are filled up. For this, the contractor here is allowed 2s. 7d. per foot cube for fir, 3½d. per foot super. for 1¼-inch deal, and 3s. 9d. each, for 12 feet planks.

In getting out the ground in deep trenches, and at the excavation for the overflow chambers at Old Ford, excellent use has been made of a form of scaffold and hoist for which Mr. Moxon has taken out a patent, and by which a score of barrows can be raised from the trench at once. The utilization of horse-power to raise materials, by connecting a chain or rope from the horse-run, round pullies, to the materials to be raised, of course is not new; it was made with great effect, at the Tring cutting on the London and Birmingham Railway; but the method applied by Mr. Moxon may have some features of principle and detail peculiar to it, which will appear on description. A trestle frame or scaffolding, formed of several pairs of "legs," spanning the line of trench, and carrying a longitudinal head to sustain the main pulley-wheels, is erected. Along one side of the line of the intended trench, in the positions required, short screw piles are fixed in the ground, for the attachment of pulley-blocks to correspond with the wheels, one for each barrow, above. Each chain, to which, at one end, a barrow is attached by slings, passes over the pulley-wheel and round the block, and is fastened, at the other end, to a chain running alongside the trench, and to this latter the power is applied. The screw pile has a friction roller fixed on the head, to ease the passage of the main chain or barrow chain. Wire or hempen rope may be substituted for chains; and the power, of course, may be that of steam or men, as desirable. The line of horse-run is most conveniently placed at right angles to that of the trench, through the intervention of a pulley; and arrangements may be made by counterbalance weights, to assist the working. The chain commonly is drawn back by the weight of the descending barrows; but, as these are heavier than required for the purpose, the surplus is made use of, says the specification which is before us, "as a counterbalance, to assist in bringing up the loaded barrows, and is about 12½ per cent. in favour of the power applied." This is scarcely comprehensible; and recollection of what we saw does not serve us. In the working, the loaded barrows being brought to the surface, and taken out of the slings, empty barrows, made to take their places, are lowered, with the aid of a break or break-wheel; then, loaded barrows are again attached, the power is applied, and the lot of barrows is again raised the 40 feet, in half a minute. One great advantage from the contrivance is that each man, having to keep time with his neighbours, is held constantly to his work. The power is said to be only as 50 to 100 horses in working what is termed a "horse-swing road." The apparatus has been found to answer well commercially, where trenches are over 12 feet in depth, and the alternative would be that of lifts by a succession of stages. Labour-saving contrivances, for raising materials, have been employed in works of a different character, in London, to a greater extent since the strike than previously. Amongst the number is one for raising materials up the line of a contrivance resembling a ladder placed perpendicularly, on the top of which are fixed pulley-wheels for ropes of ascending and descending cages or carriages. The latter are worked by a windlass at the ground, each cage being furnished with wheels to run on rails fixed opposite to one another inside the ladder. It is surprising that, although there are numerous contrivances, the work of labourers has continued to be used uneconomically, in many of the lofty London buildings, longer than might have been expected.

The Northern High-level Sewerage Works have been easy as compared with those about to be commenced, in other particulars than those we have mentioned. The sites of only four houses were crossed by the sewer in such manner that it could be necessary to rebuild them. Of these houses some were purchased by the contractor. One in Church-street, Hackney, by the railway station, though in dilapidated condition, has been kept up cleverly. The house is now carried on iron girders, over the sewer.

Besides the resident engineer and the engineer-in-chief to the Board of Works, there are two clerks of works at each point where work is going on—one, principal, above ground, and one below in the trench. Thus there were just lately, six principal clerks of works; and these report weekly on a carefully devised form, particulars, such as those of the number, situation, and depth of ventilating shafts and gullies; of existing drains let into the sewer, and places for future junctions; the description of strata as exhibited by the trench, and the average thickness, which is marked to a scale; particulars of the side entrances, even to the number of steps; of the quantity of sewer built, and cutting opened beyond; of the number and time of men employed in the several kinds of work; and of the description and quantity of the timber used or left in the work, with the situation where left, and depth in the trench below the surface; and with a sketch-plan of the place or street, and of the portion of sewer, with houses numbered and distances marked, as well as positions of gullies and gratings.

As regards other portions of the Main-drainage, we may mention that the statements in some of the newspapers, as to the commencement of the works eastward of the Lea, are not strictly correct. The drawings are only now in hand. This division of the drainage, described as the Northern Outfall Sewer, will, however, be the next portion for which tenders will be required. The work going forward about Stratford and Barking Creek, has been merely the preliminary boring, to ascertain the nature of the strata. As in previous cases, the results will appear in the drawings.

The Middle-level Sewer, north side, and the Outfall Sewer, south side, will be commenced immediately. The tenders for the Deptford pumping machinery have been sent in, as our readers know.

The High-level sewerage, south side, is progressing at several points. In the Broadway, Deptford, whence the two sewers, the main line and the Effra branch, extend side by side, as described in a previous notice, for a considerable distance, there is just now a great open cutting; running sand has been met with, and a large quantity of timber is used in shoring. We have not, however, made an inspection. Portions of the work of the main line, we learn, are in hand towards Stockwell; and on the Effra Branch much has been done at Nunhead, and in commencement of the Dulwich tunnel. At the tunnel there is much to interest geologists, and fossils are met with. Mr. Grant is the resident engineer for the High-level sewerage.

Pending the completion of the plans and works for the sewerage of the low-level, south side, a pumping-station for the relief of the Earl Sewer by discharge into the river, is to be formed. The lower portion of this sewer for about one-sixth of a mile in length, is to be diverted to a somewhat different place of outfall, at St. George's Stairs, Grove-street, Deptford; whilst the tidal flaps will be reconstructed, and the arrangements for the outfall as much as possible improved. These several arrangements will probably remain after the completion of the main drainage works, for use on emergencies. A tender has been accepted, as mentioned in our last number.

In the western division, which includes Hammersmith, Fulham, and Chelsea, and the district of which the West London Railway may be taken as the central line, extending to the London and

North-Western line, sewerage works have been some time in progress, about Acton and Shepherd's-bush, to form a connection, temporarily at least, with the present Counters'-creek sewer, and ultimately with the arrangements for outfall which may be settled. The principle, however, of the sewerage of this district may be considered as decided upon by the Board of Works. The outfall will be into the Thames,—the sewage being disinfected or deodorized.

The material which appears likely to be employed for the deodorization is perchloride of iron. Tenders are to be sent in on the 12th of April, for the supply of quantities not exceeding 5,345 gallons a day, at certain stations, at times to be appointed between the 1st of May and the 31st of August next, besides further quantities on receipt of notice. These arrangements are designed first to combat the evil of the stench of the river which is expected to recur from year to year till the Main-drainage works are completed. The deodorizing stations are chiefly those which were in use last year. There will be thirty-nine of them, for an estimated quantity of 4,095 gallons daily, together, on the north side of the river, and fifteen of them (whereof five belong to the Earl Sewer alone) for 1,250 gallons on the south side. The Duffield Sewer is expected to require as much as 414 gallons. The outlet of this sewer is in a district of Bermondsey where the deaths from cholera in 1853 and 1854 were 20·1 per thousand, nearly the largest number on that side the river. On the north side, the Fleet Sewer may require 718 gallons daily, the London-bridge Sewer 544 gallons, the King's Scholars' Pond Sewer 497 gallons, and the Ranelagh Sewer 382 gallons. The quantities contracted for are to be subject to diminution or discontinuance on fourteen days' notice being given by the engineer. The perchloride delivered is to be tested by a chemist for the Board. It may be either in the solid or the liquid condition; but the tenders are to state the minimum number of ounces of iron in the form of perchloride, per pound or per gallon, and the maximum number of ounces per gallon of free acid. The perchloride was decided upon in accordance with the report dated August last (and printed in full in our last volume*), in which, after the examination of a large number of proposals, Dr. Hofmann and Dr. Frankland recommended the perchloride as markedly superior to lime, or to chloride of lime, with quantities of equal value; or, in other words, as costing least for the deodorization of equal quantities of sewage. The perchloride was found especially advantageous for permanency of effect produced. Limed sewage, it would seem, becomes offensive in less than one-third the time of the sewage treated with the perchloride. At the last meeting, however, of the Board, as our report has shown, the question of perchloride against lime was again referred to the same parties, and Dr. Miller. In any case, however, should the putrefaction have been allowed to commence before getting rid of the deposit, the process could be arrested only by quantities of the material which it would be almost impossible to obtain. It may be useful to add that the present daily discharge of sewage of the western division is 4,646,875 gallons, which, in future, might be doubled. Dr. Hofmann and Dr. Frankland stated that the deodorization of this, required all the year round, would not entail a greater outlay than that of 2,821*l.* 3*s.* for the disinfectant. We cannot but think, whilst their report is favourable to the desired view, and in a degree not previously anticipated by its authors, so far as the immediate disinfection is concerned, that it discloses apprehensions as to success of the mechanical arrangements of filtration, or deposition, for the separation of the residuum. The temporary storage of the sewage, and the removal of certain quantities of deposit, may possibly be found harmless for the limited quantity of sewage of the western district; but we should be better pleased with the principle of the scheme of the Metropolitan Board, had not an important deduction from the conclusions, to be made.

THE ARCHITECTURAL EXHIBITION.

ALTHOUGH the Architectural Exhibition, in the Conduit-street Galleries, will not be open yet for a few days, most of the drawings are hung, and lead us to hope that the collection will be interesting; though it is not all that could be desired. The smaller gallery is almost wholly occupied with competition drawings. Thus, for the Manchester Assize Courts, we have the designs sent in by Messrs. Garling, Truefitt (a clever flank), Crossland (in the Missal style as it may be termed), E. M. Barry (with a Covent-garden Opera House treatment), Norman Shaw (some of the details very clever), F. H. Pownall, Roger Smith, Allom, Green & Deville, and Phipson. For the Cambridge Guildhall there are the designs by Messrs. J. P. Jones, I'Anson, Deville Green, &c. There are some of the designs sent in for Heigham Church, one or two of those for the church of SS. Peter and Paul, at Cork; and Mr. Morgan's design for the Jews' Hospital, mentioned by us at the time, as was the case with many of those previously alluded to. The design by Mr. Ernest George, to which the Royal Academy gold medal was awarded, is also here. In the chief gallery there is no *tour de force*. The larger, and in some respects most noticeable contributions by one individual, are six frames sent by Mr. F. R. Wilson; three of them rough groupings of the buildings of Athens, Rome, and Mediæval England, under the title, "Gothic or Classic?" and one, a very elaborate plan of Alnwick Castle, showing all the new Italian ceilings, and which ought to be nearer to the eye. Looking hastily round the rooms, we see, prominently, a view of offices recently erected in Mincing-lane by Mr. Whichcord; designs for fountains by Mr. Stapelton (elsewhere there are some by Mr. Burges); proposed schools for St. Philip's, Bristol, by Mr. E. Godwin; shops at Folkestone, by Messrs. Walton & Robson; restoration of part of the high altar, Westminster Abbey, made under the direction of Mr. Scott, who himself sends some photographs of parts of his Foreign Office; cemetery chapels at Ledbury, by Mr. F. P. Cockerell; besides sketches for fountains from him; a collection of fourteen Northamptonshire towers and spires from churches restored by Mr. W. Slater; the church and other buildings at Boyne-hill, by Mr. Street, who also sends views of St. Giles's Church, Oxford; a frame containing buildings recently erected by Mr. Truefitt; and a number of sketches and designs by Mr. N. Shaw, in decorated deal frames. Next week, however, we shall be able to view the exhibition more carefully, and speak of it more fully.

SYMBOLISM IN REFERENCE TO ART.*

ALONG with Egyptian architecture, some notice should be taken of Egyptian lions. In Egypt the lion was symbolical of the overflowing of the Nile. When the sun was in *Leo*, the greatest rise took place; hence *lions' mouths* came to be a speciality of water-spouts, as lions themselves were of fountains of water; but it is chiefly with the *sun* that their connection lies. Horus, as the sun-god, had his throne supported by lions (Rougè).

The child Horus, seated on a lotus-flower, expanding as it rose to the surface of the water, was symbolical of the sunrise, and of the eternal youth of the divinity. Lions were also associated with the worship of Mithras, or the sun.

The lions at the gate of Mycene are supposed to have been connected with Mithras; but, I think this is a mistake. Lions, oxen, and cherubim—a rather singular fellowship, were among the brazen ornaments of Solomon's temple (1 Kings vii. 29). Two lions stood at the side of Solomon's throne (1 Kings x. 19). So they did also at the sides of the throne of the king of Egypt, as we may see on monuments; and possibly the son-in-law of the Egyptian monarch may thence have taken the idea; but the symbolical meaning of lions in this situation had reference to the administration of justice. It is probable that the Romanesque architects derived their lions from the Bible record; and their position at church doors, frequently with the columns of the porch resting on their backs, had a reference to the custom of administering justice there, and the rendering of certain public acts, so that the porch, with its lions, became a tribunal, and hence the formula which many public acts and documents bear, "*inter leones.*" M. de Caumont has some interesting remarks on this subject. The lions over the gate of Mycene had probably a similar meaning; they were there as symbols of justice and judgment; for the gates of cities in the olden time were often made the places for administering the law. I once thought that the lions of Daniel—so frequently seen on early Christian sarcophagi—might have had something to do with those at church porches; but I believe the association of lions with places of justice is of much earlier date than the days of Daniel. It is true, Shylock exclaims, "A Daniel, a very Daniel, come to judgment;" and Daniel himself might be put for the perpetual symbol of all righteous judges; but the poets, to whom we are often indebted for preserving the popular vestiges of nearly worn-out usages and exploded lore, and to no one more so than our immortal Shakspeare, have occasional reference to the lion as the symbol of clemency, and of generosity combined with power. Thus Troilus, upbraiding his brother Hector for sparing the fallen Grecians, bidding them rise and live, says:—

> "Brother, you have a vice of mercy in you,
> Which better fits a lion than a man."
> *Troilus and Cressida*, act v., sc. 3.

The aspect and noble bearing of the lion is expressive of dignity and power. Unlike all other members of the *Felis* family, he holds up his head and looks you full in the face, and has appropriately enough been called the king of animals. Lions draw the car of Cybele, the Earth, or the great mother, possibly to symbolize her influence and authority. Among the Assyrians, Beltis, the female form of Baal, or the lord, and consequently the queen of heaven, was represented standing on a lion. The lion is an emblem of solitude as well as of royal power. In Christian symbolism, lions are associated with Paul the Hermit; and, according to the golden legend, they dug the good man's grave. A lion is given as a companion to St. Jerome; and a unicorn is put by the side of the fair St. Justina, to signify her purity and virtue. The lion and the unicorn meet together as supporters of the royal arms of England; but here the British lion is rather an equivocal character, placed *vis-a-vis* his spotless associate, and their union savours of a Persian myth; for, while the unicorn is the first of the pure animals of Ormuzd, the lion is one of the impure animals of Ahriman; and so the royal authority in England, or its symbol, is upheld by supporters of opposite principles.

Having said so much of the royal lion, I must, in justice, say something of the imperial eagle, not that this bird has to do with architecture, as the former, nor has it been made a sign in the heavens: it only stands by the side of Jupiter, the lord of the sky, and its personification, whence come lightnings and the bolts of the thunderer; but Apollo, or the sun, claims the eagle, no less than Jove, or the sky; and with an equal right, for while the eagle soars aloft in the upper regions of the atmosphere, and builds its nest in high places, it has a wonderful sight, and could, from time immemorial, look steadfastly at the sun. Dante notices this (Pard. I., 48) on Beatrice gazing intensely at that luminary; he exclaims:—

> "Aquila si non gli s' affise unquanco."*

Possibly the wonderful eyesight of the eagle may have had something to do with the bird becoming the symbol of St. John, who, in his vision, looking up steadfastly, saw an angel standing in the sun. The history of the eagle as an imperial ensign will be found in Canto VI. of the Paradise of Dante, to which I must refer you. Considering the character of this bird, we cannot be surprised that the Aigle Français should long have had its eye upon the summit of Mont Blanc.

A history of animals in reference to their symbolical characters, while it would show much that is interesting in their habits and manners, would at the same time throw considerable light on the theology, mythology, and art history of the ancients.

The Greeks, by not caring to ascertain the symbolical value of animals' heads, came to treat the gods of the Egyptians with very little respect. Wit here took the place of wisdom, and they sought to turn into ridicule what they did not care to understand.

THE TREE OF LIFE.†

The art history of the Tree of Life is curious: it had its origin in the far East, where the life of nature and of man was combined in one poetic and symbolical whole. Its most unmistakable form occurs among the Hindus; it is described as having first appeared on the mountain of Paradise (Himavet or Méroù), as the antique Phallus of Siva, which the god divided into twelve lingams radiating light, and afterwards caused to be transplanted into different parts of India (see Guigniaut).

Dr. Layard, in his "Nineveh," has an engraving of a cylinder, on which is a tree of the form, shown in drawing V. (enlarged), between two winged bulls (here omitted). It would seem to be a conventional form of the palm tree, the branches ending in terminal buds, and might either have suggested the Indian myth, or might have been derived from it. There are two tripartite trees in a similar style on one of the tablets in the British Museum.

The winged bulls, with human heads, are analogous to the Royal Sphinxes among the Egyptians, and symbolize intelligence united with force and power, in reference to the great Assyrian monarchy.

Every country has had its sacred tree, and some countries have had more than one. Egypt had several; the earliest was the palm tree, the date palm (*Phœnix dac*

* Page 619.

* See p. 178, *ante*.

* We may observe the eagle, as a symbol of Apollo, on an altar to that leader of the Muses, in the Museum of the Capitol."

† This part was not read, but we have thought it better to make the subject complete.

tylifera); after that the sycamore tree (*Ficus sycamorus*), and subsequently the Perséa (*Balanites Ægyptiaca*). The first of these may have been sacred to Osiris, it was so to the sun; the second was sacred to *Netpe* (or *Nutpe*); the third was sacred to *Athor*.

Netpe was the female personified symbol of the heavens, or the ether of celestial space, which in the Egyptian doctrine, acted the part of the mother in the divine regeneration—itself symbolized by the *scarabeus*—as the new birth was by the *lotus*. The symbol of Netpe was a vase; she was the especial protectress of deceased persons, and from the branches of her sycamore administered to them in heaven the fruit and water of eternal life. This is the subject shown in drawing VIII., enlarged from Rossellini (plate cxxxiv., part ii.). It is taken from a tomb at Thebes, and represents a scene in the Paradise of Osiris, in which an Egyptian family of the eighteenth dynasty, the head of which was named *Poèr*, are receiving the food of immortality.

The tree stands on a sort of aquarium symbolical of the sacred Nile, the life-supporting agent in the land of Egypt. Within it are certain fishes that inhabit the waters of the Nile, and birds that fly above, with plants that grow upon its borders. On each side is the papyrus plant, symbolical of lower Egypt, and the *heron*, of the first transformation of the soul in its new birth, or regeneration, in the Paradise of Osiris.

The departed are here shown in their living bodily forms, as resuscitated from the dead; but the symbolical figure of the disembodied soul, a sparrow hawk (*Falco nisus*), with a human head, is added to distinguish between the present life and the future.

The representation of the palm tree as the tree of life, occurs on a very early *stèle* in the Berlin Museum. It was found by Dr. Lepsius, in the village of Abousir, near the Great Pyramid. From the upper part of the stem of the tree proceed two arms, one of which presents to the kneeling figure of the deceased, a tray of fruits; the other pours from a vase a stream of living water, which the deceased conveys to his mouth. Beneath the tree are two herons, feeding from equilateral triangles, — extremely symbolical. We may sometimes see similar symbols of birds feeding from the equilateral triangle on Christian monuments. There is one such in the Church of Sta. Maria, in Trastevere. I took a sketch of it when last in Rome. This stèle is broken; and little is seen of the figure that was behind the principal one.

Dr. Lepsius was kind enough to inform me that he considered this stèle anterior to the fifteenth century, B.C.

There are two other stèles in the Berlin Museum, of which, also, I took sketches the last time I was there. In one Netpe appears from her sycamore-tree, administering the food of eternal life to the deceased, who kneels before Osiris. There are two incisions in the stem of the tree, such as are usually made, it is said, for procuring fruit of a pleasant flavour; or, as Hasselquist states, because the inhabitants believe it renders the tree more productive.

The deceased presents to Osiris the symbol of the *new birth*. It is held over a vase of water, possibly to signify the purity of the regenerated life, or its source. Behind the throne of Osiris stand *Horus* and *Isis*, and her sister, *Nepthis*.

Isis usually bears on her head a *throne*, which is the hieroglyphic of her name; her symbolical head-dress is a disc, with the two horns of a cow; she is then, however, apt to be confounded with *Hathor* (the Egyptian Venus). On some very ancient monuments her symbol is a cow (Rougè).* Isis, as a mother nursing her infant son, Horus, might be taken for the *Virgin* herself (another instance of the homogeneous character of human ideas). The Queen of Heaven, *Tëen-how*, is thus represented by the Chinese nursing her divine son. There is a very interesting porcelain model of this in the Ethnological Museum at Copenhagen, and what is equally curious, her little son holds in his hand a lotus-bud.

Nepthis, who, with her sister, recovered the body of Osiris from Seth, the evil principle, and restored it to life, also assisted in the education of Horus: she bears on her head the hieroglyphic of her name, a house surmounted by a basket.

Horus, the son of Isis and Osiris, who avenged on Seth the death of his father, and is the prime minister of punishment in the mysterious region of condemned souls, appears here with his sparrow-hawk head, wearing the *Pschent*. By some he is thus regarded as the brother of Osiris. On the opposite side of the tree kneels the sister of the deceased. Dr. Lepsius considered this stèle to be of the 19th dynasty, or about 1400 B.C. It had been in the Museum some time, and it was not known where it had been found. The style shows it to be later than the former.

The sacred tree, the Tree of Life, occurs on the Nineveh tablets as a conventional palm-tree, surrounded by an enclosure of *palmettes*, attended by winged deities, or ministers holding the pine-cone symbol of life, which, in Assyrian sculptures, takes the place of the crux-ansata in the hands of the Egyptian deities.

The palmette passed from the Assyrians to the Greeks, and formed the crowning ornament of their most beautiful temples. It appears also to have been a symbol among the Etruscans, and, together with the palm-tree, will be found on Etruscan sacred utensils.

I think the fleur-de-lis, which appears as a royal cognizance in the hands of the Merovingian princes as early as the fifth century, was derived from a conventional imitation of a palm-tree or palmette.

The Tree of Life mentioned by Moses (Gen. ii. 9) growing in the midst of the garden of Paradise, has always been understood as the palm-tree—the date palm, *Phœnix dactylifera*, the same as shown on the Egyptian stèle, drawing VII., a work of art at least contemporary with the Pentateuch, if not anterior to it. St. John the Evangelist alludes to this tree in describing *the Tree of Life* on either side of the river of water of life. He says that it "bare twelve manner of fruits, and yielded her fruit every month; and the leaves of the tree were for the healing of the nations." The date palm was popularly believed to put forth a shoot every month; hence the tree, or a branch of it, became the symbol of the completed year. The leaves were used for writing on. No tree, in fact, was so worthy of this distinction being conferred upon it, and in Christian mosaics the Tree of Life is invariably represented by the palm-tree. It appears to have passed from the Jews to the Christians, for we read that it was largely introduced in Solomon's Temple, both on the walls of the sanctuary along with the cherubim, and most probably had been on the drapery of the tabernacle in the wilderness, along with the cherubim, as also on the utensils of the Temple. (See 1 Kings vi. 29, 32, 35; and vii. 36.)

Drawing IX. is the palm-tree as the Tree of Life from the mosaic in the apsis of the church of the saints Cosma and Damiano, in the Roman Forum. On a branch of the tree is perched the Phœnix, with a glory of seven rays. That the Phœnix was a symbol of the resurrection, there can be no manner of doubt. In this sense the Phœnix was a very ancient mythical creation. Dante alludes to it, Inf. xxiv. 106-8.

> "Così per li gran savi si confessa,
> Che la Fenice muore e poi rinasce,
> Quando al cinque centesimo anno appressa."

Thus the learned confess that the Phœnix dies and is born again, near to its five-hundredth year (see Ovid's "Metamorphoses," lib. xv. v. 392, *et seq.*). Ovid associates the fabulous bird with the palm-tree as preparing its funereal nest among the branches, "tremulaeque cacumine palmae," from whence, on its death, another little Phœnix rises up. It is a doubtful point whether the tree, *Phœnix dactylifera*, gave name to the bird, or the mythical bird to the tree; possibly the well-known fact that when an aged female palm-tree was burnt down to the roots a new tree sprang up amid the ashes of the old one, may have been the origin of the fable (see Pliny).

Over the apsis of this church is the symbolical lamb on an altar between the seven golden candlesticks, with five angels above forming a crown; below, in the apsis, is Christ as the lamb, with a simple glory standing on a little moundfrom which flow the four gospel streams of living water, sometimes called the rivers of Paradise, between twelve sheep for the disciples.

In the church of Sta Maria, in Via Lata, there is a similar arrangement, but here the lamb has a crucial glory. Above these symbols is a very large figure of the Saviour between the four Evangelists, along with S. Felix IV., the original founder of the church, and S. Theodore; and beyond these figures are two palm-trees.

In Christian symbolism the cross, and the Tree of Life, are identical, and one may take the place of the other. This is further shown by early Christian mural monuments in the Museum at Lyon. They are very rude, but very significant. We have here faithful Christian souls as birds (doves) feeding on a tree, their spiritual food; two of these bear the cross on their heads, as significant of their having borne it after Christ. In the lowest of these sketches we have the cross and the Greek Rho, in place of the tree; thus showing their identity in meaning.

"The cross and Christ," says M. Didron, "are one and the same, therefore, the Tree of Life and Christ are one and the same."

That the palm-tree was a type of Christ, is rendered probable by its being figured on the walls of the Sanctuary of the Temple along with the Cherubim; and this probability becomes almost, if not quite, a certainty by the spouse of the church being thus spoken of by Solomon. In the Song of Solomon, which is usually recognized by divines as expressive of the love of the church for Christ, we read, ch. vii. v. 8., "I said, I will go up to the palm-tree, *I will take hold of the boughs thereof*."

(Various correspondences might be brought forward, both Scriptural and ornamental, to show this, which is also stated by some of the early writers of the church, and gives to the palm-branch, as borne by Christian martyrs, a peculiar value beyond its ordinary symbolical sense.)

With the Tree of Life was associated the Water of Life (and so also with the sacred trees, the Tree of Life in the Egyptian theology). Water is represented on Egyptian monuments by parallel zigzag lines. This was its earliest and its simplest form, and it is seen on the rudest pottery of the flint and bone age.

It also occurs on Etruscan and other ancient vases, and around doors in Assyrian architecture, as seen on one of the alabaster slabs from the principal hall of the north-west palace of Nimroud, in the British Museum. I believe it to be the origin of the zig-zag moulding over Early Norman, and perhaps some Saxon doors, and which is there most appropriately placed as symbolical of the water of baptism: it is true, it also occurs over windows, but chiefly over doors, which is its proper locality.

The Tree of Life, recognized by Mr. Lewis over the door of Kilpeck Church, and supposed by him to be symbolical of the Trinity, and proceeding "from a foundation of light," is meant for a plant of the order *Nymphæa*, or water-lily tribe; it is not much unlike the sacred lotus, and grows out of the water, indicative of the new birth, or regeneration. What Mr. Lewis calls fruit, may be meant for buds; they look more like pine cones than bunches of grapes, but if intended for the latter, the design becomes quite conventional.

Over the side-door of a church at Mavigny (Calvados), in the tympanum, is a symbolical tree of life, which M. du Caumont thinks may be meant for the Hom, the symbolical Tree of Life of the Persians. Two animals are feeding on it.

The *hom* is a small plant, growing on the mountains of Asia, on this side the Indus; when consecrated, it is the material symbol of the Deity, whose name in the Zenda-vesta is the same, and who is therein spoken of as the Word of Life, the Author of Salvation, as well as the Tree of Life. (See the article by M. Reynaud, in the "Encyclopédie Nouvelle.")

The *pine cone*, which, in the hands of the Assyrian deities, or ministers, corresponded to the *crux-ansata* in the hands of the Egyptian personified attributes of Deity, and had the same meaning, also corresponded in Christian symbolism to the Cross and the Tree of Life. There is a very interesting illustration of this on the ivory tabernacle in the sacristy of the cathedral of Sens. (The subject has been reproduced by the Arundel Society.) The pine cone is here placed between two faithful Christian souls, figured as peacocks; and by the palm-branches attached to their necks, they are shown to have been martyrs also. Christian souls are less frequently figured as peacocks than as doves, but such occasionally occur. There is in the cathedral of Vienne, in Dauphinè, a sarcophagus containing the remains of an ecclesiastic of rank, on which two peacocks are represented feeding on the grapes of a vine growing out of a vase or sacramental cup. The meaning is obvious.

The flesh of the peacock was in early times believed to be incorruptible, and hence it was regarded by the primitive Christians as symbolical of the resuscitated and incorruptible body. But it was also thus introduced by the Gentiles before them.

In the engraving of "The Paradise of Osiris," found depicted on a wall at Pompeii, the peacock occurs along with the dove and the heron, among the sacred trees, the palm-tree and the persée.

Christian souls have also been figured as griffins. There is a tablet in St. Mark's, at Venice, a cast of which is in the South Kensington Museum, and one also in the Crystal Palace, on which two griffins are feeding on a vine that rises in a tripartite form from a vase; and that it might be understood what this vase is supposed to contain, the *thyrsus* of Bacchus is placed in it.

But the griffin, which among the Gentiles was a symbol of Apollo, whose car we may often see drawn by griffins (see small mounted engraving N), was properly the symbol of Christ, and in this sense is introduced by Dante:—

> "La fiera,
> Ch'è sola una persona in duo nature."
> *Purg.* xxxi., v. 81.

The eagle head and wings representing the Divine nature; the lion's body, the human nature.

On the baptismal font of Winchester Cathedral, a cast from which is in the Crystal Palace, two doves are approaching to drink out of a vase, in which is placed a jewelled cross: the cross here takes the place of the *thyrsus* of Bacchus in the tablet at Venice.

In the arms impaled on the money of Gregory XVI., two birds are approaching to drink out of the sacramental cup, over which is the star of Bethlehem.

Thus we have the *crux-ansata*, the *tau*, the *pine cone*, and the *thyrsus of Bacchus*, corresponding in symbolism to the same thing, the *cross of Christ*, and all significant of that primæval doctrine which the sacred tree, the Tree of Life, was intended to figure.*

H. C. BARLOW, M.D.

* The cow was an ancient symbol of the Earth, as the mother of all things.

THE UNION OF ARCHITECTURE AND SCULPTURE.†

THE subject on which I have been invited to address you is "The Union of Architecture and Sculpture."

Sculpture has been called the phonetic illustration of architecture, or the voice of architecture, from the word "phonee," which is Greek for voice. This name has been given it from the fact of its having been, in ancient, and also in the best times of modern, art, so much called in to illustrate and particularize the object of the buildings with which it has been associated.

The structures of Egypt, for instance, are wrought over with sculptural figures emblematic of the actions and sentiments each were erected to record, and the worship of each divinity, to which the classic temples were raised, were particularized in sculpture on their façades.

Thus has it come that sculpture has been called the "voice of architecture." This, however, while not, perhaps, in some respects saying too much for sculpture, might seem to underrate the force of expression of architecture, which has herself assuredly a voice, and one that is eminently powerful and beautiful, capable by turns of conveying the most grand, religious, noble, graceful, and elegant sentiments.

Painting, sculpture, and decoration, however, vastly enhance the force of this expression, and never does the language of these muses sound so sweetly as in the combined symphonies and madrigals of united art.

This harmony of force, expression, and beauty, which forms our just guide throughout the whole great subject of the union of the arts, affords, of course, the widest theme for contemplation. At present, however, as in duty bound, I will seek to confine my remarks within the limits indicated by the title of my address, viz., "The Union of Sculpture with Architecture."

The advantage of this union of architecture and sculpture is twofold, mental and sensuous: the first speaking to the mind, the second to the eye. In the more directly mental sense, sculpture has to explain and illustrate the intention and object of the building with which it is associated by means of the personages represented and the stories and thoughts it embodies; secondly, in the more sensuous qualities of art combination, it should decorate and give life to the comparatively inanimate forms of architectural structure.

Sculpture, to truly do her mission in connection with architecture, must achieve both these results.

No nation, perhaps, has ever so intimately and universally united architecture and sculpture as the ancient Egyptians—at least in respect to *relievo*: the whole surfaces of their buildings, both within and without, having been covered with these sculptured decorations; this ample use of *relievo* having been favoured by their hieroglyphic method of writing, of which the emblems were drawn from all the kingdoms of nature. So much is this the case, that the literature of Egypt may be said to have united with her sculpture in decorating her architecture.

No feature of Egyptian architecture illustrates this better than that of the obelisk. This is the figure of one now erect in Karnak, having stood there more than 3,000 years. It is 93 feet high, in one block. Now you see here at once how the figures are incised and cut into the stone, and

* To be continued.

† Read by Mr. John Bell at the Architectural Museum, Wednesday, March 28th.

that they do not project beyond the surface like the *relievi* of other styles. The figures represented are, as it were, tacked into the surface, impressed beneath like a seal on wax, so that no part of the subject is above the adjacent surface. This treatment decorated the surface without disturbing its breadth and massiveness,—the character of Egyptian architecture.

The Egyptians were great in their knowledge and practice of the union of the arts. Their whole manner was archaic, no doubt; but it was most impressive, and has been most enduring. A treatment of incised *relievo*, analogous to that they so much used, might well, I conceive, take part in our own granitic architecture, which idea has lately been favourably discussed at the Society of Arts.

The Egyptians also used vast figures attached to their temples and tombs, not unfrequently rock-hewn; also ranged in avenues. Between Luxor and Karnak, a distance of about two miles, stretched the most renowned of these avenues of statues, composed of repetitions of colossal recumbent sphinxes, lions, &c. With colossi of this character, and a profusion of incised and storied *relievo*, most of the Egyptian edifices were enhanced within and without.

We will not, however, linger longer in the valley of the Nile, but proceed to Greece *viâ* the Euphrates.

By the banks of the broad Euphrates, and between that and the Tigris, dwelt of old the Assyrians, and they also united intimately their architecture and sculpture.

On the outside of the lower story of their public structures, and in the very blocks of limestone which formed the walls, were hewn colossal images of their kings, warriors, and spirits, and other emblematic figures, from whose very backs the structure seemed to arise.

Among these figures the most remarkable are those colossal winged sphinxes, of which you may see examples in the British Museum. These were placed usually as guards at the entrances, either opposite the person entering or sideways, or both, according to the restorations of Mr. Fergusson and Mr. Layard. Between colossal sculptured symbols of this kind did Sennacherib re-enter his palace on his return from his discomfiture before Lachish.

These figures highly enhanced, decoratively, the appearance of the architecture with which they were associated, and also meant a great deal. The sphinx, as the old author, Clement, of Alexandria, says, signified "the combination of force with intellect." The lion's body with the man's head; that is, the androleonine sphinx, from "aneer," Greek for a man, and "leo," Latin for a lion. But the Assyrians had another variety of the sphinx, viz., the androtaurine sphinx, from "aneer," a man, and "taurus," Latin for a bull,—in which the bull's body was substituted for that of the lion. As the former personified military force, so might the other probably have had a more pastoral significance. The Assyrians also added eagle's wings, to typify swiftness and extent of power. These two remarkable emblems of force, together with other colossal forms at the base of the Assyrian structures, appeared as supporting the whole edifice. So you see they had a meaning, and were not merely decorations. They were mental as well as sensuous.

When these sphinxes appear on the walls, back to back, their wings, together, form a fine structural embellishment of an arched form.

Within the walls, in the interior, the sculptures of the Assyrians were of a much smaller scale, illustrating a great variety of subject. In the British Museum an additional apartment for these works has been lately opened, which will well reward a visit. Among them are *relievi*, as fresh as if they came from the hand of the workman yesterday, although 2,400 years have elapsed since that period. Here, for instance, is the cast of a horse's head just sketched in with the chisel, the original of which looks as if left off this morning, to be gone on with to-morrow.

Besides, however, the great historical interests of these works of the Assyrians, and also their frequent excellence, these lesser figures are peculiar as being of a style of very flat, and yet effective, *relievo*, half-way between the incised principle of the Egyptians and that of projection adopted by the Greeks. In modern times Donatello's method resembles this more than perhaps any other examples.

We will now proceed to the Greeks. As your time and my space will not allow of any extended discussion of each phase of our subject, it may be well to restrict ourselves as to the union of Greek architecture and sculpture to the one example of the Parthenon, which, however, is a host in itself.

Nowhere can the union of the two arts be more justly illustrated than in this example of Classic temple structure, in which they were so evenly combined that it would appear a doubt, whether the sculpture were more evidently a decoration to the architecture, or the architecture a pedestal projection and frame for the sculpture.

This far-famed edifice was commenced on the Acropolis of Athens, 450 years before our Saviour, and, therefore, 2,310 years ago. It was about 100 feet wide by 225 feet long; was built of white Attic marble, and was, within and without, most elaborately illustrated and decorated with sculpture.

In the most retired interior was the statue of the goddess "Athene," herself, 60 feet high. This, however, having been made, by the decision of the priest, of ivory and gold, contrary to the wishes of the sculptor himself, Phidias, has long since perished, not a pinch of dust remains of the daughter of Jove.

There were various other smaller statues doubtless within the walls of this edifice, as attendants on the divinity, and as illustrations of the object of the temple; but of these it was deprived by the Romans when they finally vanquished Greece, and despoiled her at once of her freedom and her works of art.

It is, therefore, to the exterior sculptures of which we have record, and to those cherished remains which we possess in the British Museum, that we must turn. In these also we shall find that not only did they decorate the temple exquisitely, but they told its story.

The Parthenon was, as you know, erected in honour of the goddess whom the Romans called Minerva, but the Greeks Athene, and after whom Athens was named. She was fabled to be the daughter of Jupiter, or Zeus, the supreme god of heathen mythology, and to have sprung ready armed from his head. She was worshipped as the goddess of wisdom. It happened also that she always remained a maiden. Parthenos is the Greek for maiden,—hence Parthenon, the house of the maiden, or, in other words, the Temple of the Virgin.

The spaces on the front and sides of this temple were chiefly decorated with figure sculpture on the east and west fronts, as in the tympana, and the metopes between the triglyphs over the columns, which were continued at the sides as well as in the frieze which ran round the cella—or body of the building beneath the colonnade,—of these the most important are the tympana.

Within the triangular space of the east tympanum, which was in reality one gable of the roof, was represented, in sculpture, the birth of Minerva or Athene, and the council of the gods on Olympus, the figure of Jupiter or Zeus occupying the centre.

Within the west tympanum, on the opposite front, was represented the contention of Athene and Neptune, or, as the Greeks called him, Poseidon, for the honour of giving the name to Athens. Athens, the capital of Cecropia, or, as it was afterwards called, Attica, was situated on the sea coast, connected at some distance with her port, or harbour, called the Piræus, just as Edinburgh, our northern capital, often called the modern Athens, possesses her Leith harbour. The Athenians were in great measure a warlike maritime people—sea-robbers in fact originally,—and yet they claimed to furnish the favoured abode of wisdom and the arts of peace. Thus the myth arose naturally that originally there had been a contention between the god of the sea and the goddess of wisdom for the privilege of naming the city.

This is the old story:—These two deities having seriously disagreed on this subject, the assembly of the gods arranged the dispute by passing the resolution that that one should have the preference who produced the most useful presents for the inhabitants of the earth.

Upon this, Neptune struck the rock with his trident, when immediately a horse issued forth.

Minerva then waved her hand, when, full in leaf and fruit, from the teeming earth, sprang up the olive. On which she was immediately congratulated by the unanimous voice of the gods as having obtained the victory, who observed, as Hesiod says, that the olive, as the emblem of peace, is preferable to the horse, the emblem of war and bloodshed,—a remark in which probably we shall all coincide in spite of out rifle corps! The representation of this contention, in connection with groups of those various personages which figure in the tableaux of Greek mythology, formed the subject of this tympanum. Thus did this composition voice the west front of the temple, and image forth how the daughter of Jove came to be the patroness of Athens and the goddess of the temple. This was the mental part,—it thus told the tale of the edifice.

As to the sensuous part, as an achievement of art decoration, doubtless nothing also could be more complete, according to the data that remain to us. Without crowding or confusion, the triangular space afforded by the tympanum was occupied by fine rich masses of sculpture, carefully adjusted as to projection, and light and shadow, and on a plan of geometric balance and flow of line, on the principle of which I shall presently offer a few remarks.

Along the sides of the temple, above the columns, were arranged between the triglyphs, the metopes, which were chiefly of groups of warriors contending with centaurs. This is a very common subject in Greek sculpture. Probably its frequency arose from the Greek traditions of the early incursions of the Thessalians, who were horsemen, upon the Greeks, who were foot-soldiers. The old myth of the centaurs—a compounded form of a man and horse—arose from the appearance of a horseman in the distance, when they might to those to whom horses were unknown present the idea of a single animal. This was not confined to the Greeks. When Cortez and Pizarro invaded America, and for the first time introduced horses into that country, each mounted Spaniard was taken for being all of one piece with his horse—together one animal—which, as you may conceive, proportionately astonished the natives. Just so it might have been when the Thessalian cavalry made the great incursion into Greece. The Greeks successfully resisted them and drove them out; and thus, probably, the sculptured fights of men and centaurs, the record of this early triumph, became a recognized and staple part of the decoration of their public buildings. The collection of ancient marbles in the British Museum will afford you several examples of this, besides those of the Parthenon.

So much for the tradition they recorded. In their quality of bold art decoration within the square spaces they occupied they were highly effective, as we see by the remains we possess, and the androequine bodies and forms come in finely to give variety and surface to them as architectural compositions.

The figures we have spoken of in the tympana of the east and west fronts were all more or less colossal, or considerably above the size of man, and they represented divinities of different grades, These were all figures on the round. These, separate or in groups, however, were yet so arranged near the wall behind them that they presented the combined effect of a very bold high relief.

On the other hand the metopes, although projecting much from the background, were only in high relief, being wrought out of the same block of stone with the background and attached to it. They were of a scale less than that of life, and represent the actions, not of divinities, but of heroes.

We now come to the frieze, in which the same consistent principle of gradation in subject, scale, and treatment, from the gods to men, from the tympanum to the frieze, is preserved. The frieze of the Parthenon was a nearly continuous equable band of low relief running like a zone round the whole solid of the temple beneath the colonnade. It represented an Athenian procession in honour of Athene and the other gods. This frieze is composed, almost without exception, of mortal figures,—of men, women, youths, maidens, cavalry, and sacrificial victims, &c., as we may see in the British Museum. Although less in scale than the metopes, they are equally beautiful as sculptural works and architectural enhancements.

We have not time to consider now any other Greek examples of the union of architecture and sculpture, or to dwell longer on the charms of this building, which we have taken as their type. Had we time to do so, the more we should recognize how thoughtful, logical, and just were the inventions and art treatment of the Greeks in the union they produced. As regards the Parthenon, the sculptural theme and art moved in unbroken harmony with the structure, which it enhanced to a degree which has never probably been elsewhere attained before or since.

From Greece we naturally proceed to Rome. The Romans, in their architecture, adopted in many respects the practice of Greece, but added many inventions and additions of their own, or drawn from other sources. Rome, indeed, was even more lavish of sculptural enhancements than Greece, and works of this art were used in connection with her architecture in the greatest pro-

fusion. For this purpose, not only did they ransack Greece, but had very many copies made of Greek statues, as well as new ones of their own to decorate their baths, fora, gymnasia, or places of exercise, as well as their temples and public arenæ.

The magnificent tomb of the Emperor Adrian, built prospectively for himself, which is now the Castle of St. Angelo, was among other buildings magnificently enriched with statues; and in the ruins at its base was found the well-known dancing faun restored by Michelangelo.

The Roman triumphal arches, also, as those of Titus and Septimus Severus, were profusely enriched with sculpture, illustrative of the victories of which they were the record. They also, like the obelisks, were records in stone of the events they celebrated; and this not only by means of illustrative statues and *relievi*, but also, they usually contained a long inscription decoratively arranged in the front.

No feature of architecture, however, can be adduced in which sculpture has taken a greater part than in the Trajan's column, the whole of the surface of the shaft of which is occupied by relievi of triumphs of that emperor. These appear in one continuous band, running specially round the surface from the base to the capital, like a ribbon round a staff, and containing many hundred figures. It was a bold thought, and effective decoratively; but it is deficient in clearness and mental effect. The compositions cannot be seen in sequence at any point, and are not distinguishable without a glass, except just at the base of the shaft.

Although it has been copied in Paris, it may rank rather as a clever, novel, and vigorous conception, very well for once, than as among examples to be followed of the union of the arts.*

THE EXHIBITION OF THE SOCIETY OF BRITISH ARTISTS.

NOT entirely is it class of subject, and less is it the manipulation, that constitutes a work one of high art; and, of such art the inventile and intellectual attributes present, are more nearly than is supposed, the same, in one walk of art as in another. Portrait-painting in the hands of a Reynolds or a Vandyke, or landscape in those of a Claude or a Turner, may fairly rank higher than painting of subjects allegorical, religious, or historical, when these, however excellent as studies from the life, contain nothing more, imparted to them, originated from the producer or resultant from observations before made and then filtered through his mind. Each branch of art, fine art, or called only *decoration*, can be constituted by the treatment, art such as may be entitled, almost if not altogether, to the designation, *high art*: for, whilst one branch may from subject be fitted for location in the halls of the Houses of Parliament, and another to a boudoir, and one may afford greater opportunities to the producer than the other,—but whilst making extraordinary demands,—no work is one of *art* at all, properly speaking or in the sense in which we should understand "art," unless it have the attributes which in the fact of their presence, go to constitute the equality of merit or parallelism. We have frequently felt called upon to state, both to architects and others, the view of what should be regarded as art; but it is equally necessary to insist upon what is needed in portraiture and landscape painting, to constitute the distinction between what might be done by the camera or a certain sleight of hand, and what involves something further. Mere drawing, or the use of colours and brushes, would be scarcely art; yet even objects in still life, or a very dunghill, may be, whilst accurately represented, made also that which is required, and which goes far beyond. This statement of a difference between one kind of aim and the other is not the less correct, though the qualifications for representing and for originating exist together, and though one may assist, and may come to results—those of one kind such as are not distinguishable from those of the other. What is accidental, or imparted,—as the expression of face or passion in a portrait, or the effect of light in a landscape,—it is this which constitutes the *art*-domain.

There is no occasion to show an excellence of the British school which has now been recognized by Continental nations, and is at length more apparent by the treasures that are the property of the nation. But, looking at some of the many exhibitions of pictures which are open every year, there has been cause to apprehend that the public desire for the advancement of art was not being seconded by the artists of works of a particular class; though, from the category referred to, we may do well to except such works as a large number of those in the exhibitions of the Societies of Painters in Water Colours. Whether in exhibitions consisting chiefly of works of landscape art and subjects from domestic life, or in the exhibition of the Royal Academy, there must be in future manifested both the utmost art that can be expressed in a particular subject, and, to speak truth, a greater amount of it than we have lately discerned in some cases. The purchaser can play his part only when he has the meritorious work offered him, and after having been taught by the frequent exhibition of such works.

With these views, we are glad to find that the exhibition just opened, of the Society of British Artists, without any special application to it of the remarks we have made, is a considerable advance upon recent exhibitions at Suffolk-street. There are in the galleries, this year, works in landscape of the highest order of excellence, some capital bits of domestic life, and a few works of historical painting, some of them highly commendable; and generally the collection consisting of 633 paintings in oil, 226 in water-colours or other vehicles, and ten in sculpture or plastic art, is the best of several years. In the landscape department, we may instance the rock and waterfall scenes, chiefly Norwegian, by W. West, as Nos. 373, 422, and 554, some of which seem to us not inferior to anything of the kind that has been produced. The same artist has some scenes in Wales, one "On the Leant, Carnarvon" (98), also good, though not equally remarkable as subjects. Of the same order of merit is the "Scene on Egton Moors, Yorkshire," by E. J. Niemann (17), where, besides an excellent representation of twilight, a story is suggested, and interest is given to the scene, by the manner in which the mosstroopers "in ambush" are discoverable in the picture, and amongst the rocks, or stealthily following the water-course. Mr. J. B. Pyne exhibits but one picture (74), "Wrecks and Wreckers, off Beaumaris," a sunset piece finely treated, with stranded vessels and figures, helping by grouping and incident to make the picture, and to add to the atmospheric effect and inanimate matter represented, the interest of a different kind.

Every landscape-painter recognizes the value of figures as an accessory; but it is not every one who perceives that it is necessary they should be correctly drawn, however sketchily, and that it is desirable, however small, they should be doing something,—though they should not detract from the main subject, the landscape. Even in Turner's works, the later productions, the figures operate absolutely to the disadvantage of the effect intended: whilst, in some of the works of Claude, Wilson, and others, figures made to give the title of the work, have so little force in the picture, that the latter would be judged a failure, were the "work of art" observed according to strict rules of criticism, that is, in the spirit that it was entitled, and that which the painter set forth as the "end" he meant to "compass." Many of the works in Suffolk-street are, however, very good examples of the proper treatment. Mr. W. Shayer's are of the number, and may be instanced all the more advantageously, because not characterized by much else than what we have named: at least they have become mannered, and lacking results derived from recent and frequent going to the observance of nature. The "Lane Scene, Isle of Wight" (229), is about the best of eight pictures by this artist. Mr. H. J. Boddington, also a large contributor, is one who has become remarkable for a manner not quite the best; but in the landscape "On the Hills, North Wales" (145), there is good colour and an excellent effect of sunlight through a haze; and the "Welsh Stream, painted on the spot" (314), as well as No. 418, have merit. Mr. Vicat Cole's six pictures are all of them good as landscapes with figures. Nos. 16, and 106, a very fine work, are the best. Mr. G. Cole, who is also prolific, devotes himself to subjects of a different class, and with much success, as in "A Home-stall in Caernarvonshire" (36), and (203) "A Welsh Interior, with Sheep and Donkey." He also exhibits (627) "A Quiet Pool on the Machno, North Wales," a good picture. The "Tantallon Castle" of Mr. J. Syer (87) is a large and finely painted work, especially in the representation of the sea foaming about the wreck, and the action of the groups of figures on land. Mr. J. Zeitter, though always sketchy, is one of those who are particularly successful in the treatment, of the kind referred to above, of the figures in a general scene; though some of his works are to be regarded as figure-pieces rather than landscapes. In "A Passage-boat on the Lake at Füead, Hungary" (96), each group, and the balance of the different groups, and the relative force of figures and landscape, are well managed. Amongst the works of superior excellence of a similar class, may be named "The Rush Gatherers on Loch Coreb" (204), J. J. Hill, who is the painter of a work of a very different kind, and having some of the highest qualities of art,—"The Gleaner" (481), a half-length female figure, with good management of colour, and of the shadow on the face of the neck. The treatment in some respects calls to mind that of similar subjects by Reynolds. We may mention at this time, the "Roman Peasant Girl" (161), "Shepherd Boy of the Abruzzi" (193), and "Jacinta" (207), by the late T. Y. Gooderson, as well-painted half-lengths in a low tone of colour; the "Rachel" (86), by J. Stevens, and Mr. J. E. Collins's "A Little Romp" (224), a good rendering of girlish playfulness. Observation of nature modified in domestic life is shown in the works, with a smaller scale of figures, of W. Hemsley, T. Clater, J. Collinson, E. J. Cobbett, J. E. Walker, and others; and minute study, in the abandoned ship represented in No. 37, "Off the Foreland, Studland Bay, Dorsetshire," by C. B. Hue, and in the "Summer on the Thames" (234), "A Pool" (578), and other works by W. W. Gosling; and fine effect in those of A. Clint and J. Danby. Mr. A. J. Woolmer exhibits eight works of the manner which he has made so well known, to which it is impossible to deny the merits of poetry of conception and colour, or to avoid noticing errors against probability, and some errors of drawing. "The Flower on the Window-sill" (73), T. Roberts, and "Stray Thoughts" (284), T. F. Dicksee, resemble works by the same hands seen before, but deserve to meet with purchasers; and there is much careful painting in the "Prayer" (47) of Mr. Chester Earles, though the face has not altogether a pleasing expression. Mr. J. T. Peele's "A Moment of Suspense" (117), and "Girl with Blackberries" (531); Mr. J. Noble's "The Young Agriculturist" (97); the works of T. Earle and J. F. Herring, like others, well known for merit; and Mrs. Rimer's flowers belong to very different classes, but are equally worthy of notice. The department of historical painting, with works of the largest scale of figures, is most prominently represented by the president, Mr. F. Y. Hurlstone, and Mr. W. Salter. The latter artist's "The Union of the Rose and the Lily—first interview of King Charles and Queen Henrietta Maria" (119), though the more ambitious work, and one well painted in parts, is not so satisfactory as is the male figure (though not a Jew) in the group from the Merchant of Venice (225). Mr. Hurlstone, we think, succeeds better in his other subjects than his portraits; though in one of the former, the "Margaret of Anjou, Queen, and Edward Prince of Wales, in the Wood on their flight after the fatal Battle of Hexham" (179), it is necessary to get rid of some of the colour, or other peculiarity, to realize the breadth and truly grand conception and drawing which are embodied in this work. The same excellence of manner, however, is observable in the portraits (58, 118, &c.), in one of which, the portrait of Captain Hopwood, the dogs are by Ansdell. We should also not omit to mention "The Three Ages" (134), by Mr. M. Claxton, which though not successful, according with the intention, in presenting a picture of human life,—for, it wants other figures to represent infant life as distinct from childhood, and matronly beauty from simple girlhood or womanhood,—manifests technical skill in the drawing, and in the separate figures, as in that of old age.

In the Water-Colour Room, there are a good drawing of a stranded vessel (666), by G. Whitaker; a "View of Moel Shafod" (698), by J. C. Reed, accurate in the mountain tints; and works by J. C. Schetky, R. P. Leitch, G. Wolfe, and C. S. Varley, which should be noticed, besides a small group in marble by E. G. Physick; busts, "The Lily," by R. Physick, and the other, "Wildflowers," by G. Halse; and three minute works in *alto-relievo*, creditable to the artist, Mr. J. Holt. Amongst the lady-artists in this room are Mrs. Oliver, Miss Macirone, Miss Rayner, Mrs. Duffield, Miss Baines, Mrs. Valentine Bartholomew, Mrs. Withers, and Mrs. Croudace, who has made a considerable advance in her art.

* To be continued.

A DEPUTATION waited upon the Under Secretary at the Home Office, on Saturday, 24th, for the purpose of explaining the plans proposed by the corporation of the City of London for the erection of a new metropolitan meat and poultry market, to be connected with the projected metropolitan railway.

THE MEANS OF COMMUNICATION IN BRAZIL.

INSTITUTION OF CIVIL ENGINEERS.

AT a recent meeting, the paper read was "Upon the Means of Communication in the Empire of Brazil—chiefly in reference to the Works of the Mangaratiba Serra Road, and to those of the Mauá, the first Brazilian Railway," by Mr. E. B. Webb.

It was stated that, until a recent period, no roads, in the English acceptation of the word, existed in Brazil. Yet its area was equal to twenty-three times that of the United Kingdom, and it had a coast line of about 3,000 miles in extent. The sea-ports were frequently far distant from each other, and the communication between them was by sea. Inland, bridle paths were, to within these last few years, sufficient for the necessities of the inhabitants. These were occasionally improved, by some wealthy proprietors, by the avoidance of a terrific ascent, by the erection of a wooden bridge, and even by the building of a stone culvert. The increase of the population, and the development of commerce, led to augmented traffic; and, as the troops of laden mules grew more numerous, the yielding paths became more unserviceable. The provincial governments then took the matter in hand, taxing the troops of mules, and repairing the paths by contract. But being unpaved, and for the most part extending over a clayey surface, they were still, at certain seasons, impassable.

The province of Rio de Janeiro was stated to consist of two distinct regions. A small portion along the coast was but little raised above the sea-level, whilst the greater part was at an elevation averaging 2,300 feet. The sea-face of this elevated land had, however, a much greater altitude. It was precipitous and rugged, presenting granitic peaks from 5,000 to 7,000 feet in height. This was called the "Serra do mar."

The first attempt at real road-making was the formation of a carriage road up the face of the serra to Petropolis, a small town at the head of the gorges leading towards the Bay of Rio de Janeiro. This road was not well laid out, nor were the works upon it considerable. It had an average gradient of 1 in 16, and had only recently been macadamized. Its summit level was about 2,800 feet above the sea. It was stated to have cost 40,000*l.* per mile, although there were no disbursements for land, or legal or parliamentary expenses.

Over the sandy plain lying between the head of the Bay of Rio and the foot of the serra, the Mauá railway had been constructed. This line presented no difficulty, excepting where a deep unhealthy swamp, from one to two miles in breadth, had to be crossed. The mode in which the ordinary excavations were carried on was not at all satisfactory, although an improvement took place, when English barrows and shovels, and small trucks and rails, were introduced. Slave labour alone could be depended upon; the native poor Brazilian not being inclined to work hard. The wages of the slaves were about 1s. 4d., and the cost of their food about 7d., per diem. In the year 1857, after a lapse of four years from the time alluded to, the price of labour and food had doubled. The cost of skilled labour was generally about double that of the ordinary description. With one exception, all the bridges were of timber, with the certainty of a not very distant renewal. There was great difficulty in obtaining sound and durable timber, owing to its being almost impossible to collect in any single district a supply of one description, and also to the expense of transport to the place where it was required. An examination of a timber pier, which had been constructed for the southern terminus of this railway, in the Bay of Rio, showed that not one pile, and very few pieces of the superstructure, had remained sound, after being in place about four years and a half. All the wooden bridges had suffered in like manner, and they had been replaced by works of either iron or brick. The rails used were double-headed, weighing 65 lbs. per yard, seated upon Greaves's pot sleepers, laid on clear quartz ballast. The gauge was 5 feet 6 inches. The rails did not appear to oxidize more than was customary in similar positions in England, nor had the cast-iron of the sleepers deteriorated. It was a single line, 11 miles in length, and the cost of the works, with the rolling stock, might have amounted to 15,500*l.* per mile.

Soon after the opening of the Mauá railway, which was completed by the author, he was appointed engineer to the Mangaratiba Serra Road.

The route of this road was through a gorge, 100 miles to the west of Rio, descending to the port of Mangaratiba. On the summit it passed, in a northerly direction, to the great river Parabiba, at a distance of 55 miles from the coast. Over the original track about 22,000 tons of coffee descended to the port, and about 10,000 tons of general merchandise were conveyed up the mountains. The work was commenced in May, 1855, by a body of Chinese, who proved utterly useless as labourers. But as, of late years, many thousands of Portuguese working men had emigrated to Rio, the works of the road were supplied with them. At one time there were as many as sixty-eight petty contractors, each employing from fifteen to sixty of his countrymen, so that in a few months upwards of 2,000 men were at work. At first they refused to use the barrow and the shovel. The hoe, their only tool, was not, however, so objectionable along the steep sides of the Mangaratiba mountains, as it was on the plains of Mauá. For a great portion of its length, the road was cut out of the solid rock, chiefly gneiss, or mica-schist. Immense rounded masses of pure granite were met with on the serra, and occasionally on the plains. Trap dykes were frequent in the ravines, and, dispersed throughout the cuttings, decaying masses of basalt and amygdaloid. The cuttings stood safely at ¼ to 1, in most cases. The slopes of the embankments remained firm at 1 to 1. A thick-leaved grass, of rapid growth, protected the slope from the destructive action of heavy rains. The macadamized surface was 23 feet wide. A flagged drain, 3 feet in width, ran on the mountain side, and on the outer side a similar drain of 18 inches. The surface consisted of a pavement 9 inches deep, covered with a layer of granite metal 7 inches in thickness. A dry stone parapet, 3 feet high by 2 feet 2 inches thick, ran throughout the whole length of the road. With the exception of one arched bridge and some storehouses, none of the masonry contained lime. All the walling, the parapets, and the culverts were built dry. The abundance of stone, and the great cost of lime, in its purchase and carriage, led to its rejection. The masonry proved more satisfactory than almost any other branch of work. The Portuguese masons would make a good dry wall out of inferior materials, and with considerable celerity. The same could not, however, be said of stone work in mortar. If left to themselves, they spent as much time in filling the outer interstices as in building the wall itself.

On the Mangaratiba road there was only one work worthy of note in dressed masonry, and this was notable only on account of its cost. Although the Portuguese dressed stone very fairly, their work, as compared with English stone-cutters, proved, in this instance, four times more costly. In a locality far removed from the shore, and at first difficult of access, a bridge, with a chord of 52 feet, and a versed sine of 9 feet, occupied nineteen months of incessant labour. The coal, steel, iron, and lime, with the supplies of food, were carried to the spot, during many months, on the backs of mules. Timber had been shown to be unadvisable in Brazilian bridge building; at all events, in Central and Southern Brazil. The enormous cost of this cut stone bridge, amounting at least to 24,000*l.*, notwithstanding the most unwearied exertions to diminish expense, proved that stone was not economical. Without doubt iron was the best material for bridges in similar situations.

The works of the Mangaratiba road had cost about 12,000*l.* per mile.

Allusion was made to the railways now in progress, or in contemplation, which were said to be destined to work a commercial and social revolution in Brazil. But, notwithstanding the stability and prosperity of that country, its public works and its agricultural operations were yearly becoming more and more embarrassed, on account of the scarcity of labour. Hitherto the supply of labour and the means of colonization had been considered separately. The author had suggested, in a document he had the honour lately of placing in the hands of the emperor, a means by which public works might be made the instruments of populating the districts in which they were undertaken. This system, it was believed, would be adopted to a considerable extent on the San Paulo railway.

In conclusion, the author referred to the important question of guarantees. Two distinct methods of guarantee were in operation. The shares of the Don Pedro Segundo Railway appeared only in the Brazilian market. Upon a stated capital, an interest of 7 per cent. was guaranteed conjointly by the General and Provincial Governments. Only a small portion of this capital had been paid up, and one-third of the whole had been raised by loan in London, in the name of the General Government, at 4½ per cent. The difference in the two rates was to form a sinking fund, to replace the sum borrowed. The other method, that of guaranteeing foreign shareholders, as in the case of the two English companies managed by boards in London, did not offer much encouragement, for the shares of each company were at a discount. It might have been expected that investments in such undertakings, with a guarantee of 7 per cent., would have been largely sought after. It was felt that, perhaps, it would be more advantageous in future for the Brazilians to raise all railway money on loan. It might fairly be hoped, that ultimately Brazil, upon a calculation of the preponderance of good and evil, would not have to regret the epoch when English capital, energy, and engineering skill, assisted her in utilizing her own internal wealth.

NEW WORKHOUSE, DEANHOUSE, NEAR HUDDERSFIELD.

THE first premium in this competition, we are informed, has been awarded to Mr. Kirk, of Huddersfield. The second premium to Mr. Littlewood, of Manchester.

BELGIAN RAILWAY WORKS.

THE Belgian Minister of Public Works has just published an official "*compte-rendu*" of railway works in that country during the year 1858. It appears from this document that the total length of railways existing in Belgium (not including those for private enterprise, whose lengths have not as yet been precisely ascertained) was 1,691 kilomètres 633 mètres at the close of the year 1858, composed of 567,024 mètres constructed by the State, and 1,124,609 by companies. The State railways are as follows:—The Northern, 53,477 mètres; the Western, 205,229 mètres; the Eastern, 145,084 mètres; and the Southern, 163,234 mètres. At the above date, the number of railways constructed by companies was twenty-two. The working of the several lines is thus classified:—

	Mètres.
A. Lines constructed and worked by the State..	556,804
Lines constructed by companies and worked by the State	188,534
	745,338
B. Lines constructed and worked by companies	936,075
Lines constructed by the State and worked by companies	10,220
Total B	946,295
Total A	745,338
Total	1,691,633

The area of Belgium is 2,945,593 hectares (about 7,268,991 British acres), and on the 31st of December, 1858, the population was 4,623,089 inhabitants; thus giving a kilomètre of railway to every 1·741 hectares of area, or for every 2·733 inhabitants. Of those lines worked by Government, 693,268 mètres have a double line, and 52,070 mètres single line of way; the former being 93·01 per cent., and the latter, 6·99 per cent. of the whole, which we have stated above to be 745,338 mètres. For sidings and spare lines we have a length given of 225,000 mètres. The total length of railway line, in main lines, sidings, and all accessories, is 3,311,860 mètres. The expenses of the construction amounted in January 1, 1859, to 189,776,365 francs 30 centimes. A surplus of work not paid for amounted to 910,367 francs 67 centimes; and 15,964,400 francs were required to place the group of State railways in satisfactory working order.

The average cost of construction is 334,627 francs, 86 centimes per kilomètre (or about 21,540*l.* per mile statute), but it varies considerably according to the nature of the works. It is only 119,519 francs 79 centimes, for the section from Gand to Courtrai: it amounts to 595,122 francs 17 centimes, for that of the Meuse to the Prussian frontier. For that portion of line between Aus and La Meuse, it is one million 588,145 francs 72 centimes, including the workshops and stationary engines for the inclines. The expenditure of the State for the construction of railways since their commencement has been, as above stated, 189,776,365 francs 30 centimes; including the value of the Mons and Manage section, which figures at 13,235,505 francs 51 centimes. The total sum will be 303,011,870 francs 81 centimes. The deficit which, on the 31st December, 1857, was 16,654,092 francs 93 centimes, was reduced in 1858 to 12,815,293 francs 67 centimes.

A SUBURBAN HOSTELRY.

LONDON OF THE PAST.

SUBURBAN HOSTELRIES.

IN the memory of many not yet past the prime of life, the "Mother Redcap," at Camden-town, the "Mother Shipton," at Highgate-hill, and some other well-known signs, were far removed from town, and to go to them required a journey through meadows and green lanes. These places have now become surrounded with a vast population, and their characteristic features are fast disappearing. In place of the quaint-looking resting-places of other days, large and showy buildings, bright with all the glories of gas and compo, have been raised. One of the most picturesque of the old establishments was the "Bell and Horns," at Brompton, near the museum, where the more modern inn with that sign now is. The "Hoop and Toy," close by, was altogether a rural retreat. In Islington there were several with the old-fashioned sign-post and seats in front nicely shaded, for weary travellers or pleasure seekers in summer time. The large water-trough was a conspicuous object, and served as a means of affording refreshment to cattle and horses. There were several of these quaint farm-like inns in the Old Kent-road: amongst them was the "Half-Way House," so called, we presume, in consequence of its being half-way between Greenwich and London. This used to be a famous halting-place, particularly in the hop season, when it was thronged during both night and day by waggoners and other travellers resting on their way to town. This once rural spot is now surrounded by buildings, and the "Half-Way House" may be passed by with as little notice as hundreds of other spirit establishments in the central parts of the metropolis. In the Holloway-road—in the main street of Islington—nearly all traces of the old style, except the names of the signs, have vanished. The "Angel," behind which there was a galleried yard, in which the players were wont to amuse the dwellers in this "merrie" village, has now the matter-of-fact appearance of the present day. Some of the houses northward, which are traditionally associated with Dick Turpin and other exalted scoundrels of the road, have cast off their heavy tile roofs and are resplendent with plate-glass and vulgar decorations. In one or two instances it may be noted that attempts have been made, without going to the extent of entire reconstruction, to disguise the appearance of antiquity: the practised eye, however, soon detects the portions which have been overlooked.

The spread of new buildings has much affected the style of the old suburban taverns. When a new neighbourhood has been planned,—almost as soon as the turf has been skinned off, a hole dug for sand if there be any, and if not, a huge mound of black mould provided for the mortar, before, indeed, the roads are made,—a lofty building is reared, doomed to be, for some time, a solitude, but which is expected, in due course, to be a prosperous public-house. The style and appearance of these sink into insignificance the older buildings which are within sight, and soon a wonderful change is made in them, and the ancient tavern is put into a shape more in keeping with its young rival. In the old "Queen's Head," in Islington (which had once a front older than Elizabeth's reign), although it has been rebuilt, care has been taken to preserve the dark oak panels of one of the rooms, a ceiling, and some of the carving of early date; and it is desirable to follow this example as much as practicable, for in most of these places there is something worthy of preservation, which will become of greater interest as time passes on.

We have engraved a characteristic example of one of the wayside inns which were once so common, with its tiled roof, cattle-trough, and sign-post in the road. Viewed with a huge waggon in front (the horses decked with scarlet and blue fringes), hay-carts and rustic figures, with a background of trees, the time-worn building covered here and there with ivy, it was a scene which will ere long have vanished from the outskirts of the metropolis.

STRASBURG CATHEDRAL.

IN one of the niches of the south-eastern tower of Strasburg cathedral, now under the workmen's hands for restoration, a fourth equestrian statue has just been placed, forming a portion of the design for adorning the principal façade of this structure, that of Henry I., surnamed l'Oiseleur. The other three, erected in 1859, equestrian also, are of Otho the Great, Charlemagne, and Pepin le Bref. These works have been undertaken on the exterior of the cathedral for some time past with a view of completing the decoration of this façade and replacing, in the numerous niches, the statues which were removed during the revolution and filling other niches with statues which had never been provided for them at any period.

Thus has been restored, by degrees, the grouping of the statues representing the Last Judgment, and subsequently the statue of Christ surrounded by angels, which is above those of the Apostles over the grand "rosace." At present the works are extended to embellishing the niches of the counterforts of the towers.

It appears from the architect's researches that in 1291, when the western façade of the cathedral, commenced in 1277, had risen to the height of the gallery which surmounts the grand rose, three equestrian statues were placed,—those of Clovis, Dagobert, and Rodolphe of Hapsburg. Erwin himself then superintended the construction of the cathedral (1277 to 1318).

On the pinnacles, surmounting these niches for equestrian statues, are to be placed the statues of the bishops. They existed formerly and a few remain to the present day, leaving eight to be restored. The statues, thus numbering twenty, twelve for the monarchs and eight for bishops, are to be designed and prepared in the "Ateliers de Sculpture de l'Œuvre, Notre Dame," under the immediate superintendence of the architect, who has proved that one of the nineteenth century can powerfully contribute towards the restoration and completion of a grand architectural idea of the thirteenth century.

ART-UNION OF LONDON.—We would direct the attention of our readers to the circumstance that the subscription list will be closed at nine o'clock, this Saturday evening. The amount promises to be satisfactory.

ST. PAUL'S CHURCH, HAGGERSTON.

THE first stone of this church was laid on the 5th of May, 1859, by the Bishop of London, and the consecration took place on the 31st of January last. The building would have been completed and consecrated before Christmas but for a delay in the works occasioned by the strike. The site was secured by the Metropolis Churches Fund in 1849, but until last year sufficient funds could not be raised to commence the work of building. The plot of ground lies at the intersection of Broke and Marlborough roads, Dalston, on the estate of Sir William Middleton, Bart.

The church, which is built of brick, consists of nave and aisles, a spacious chancel terminating in a polygonal apse, a recess for the organ over the vestry on the south side of the chancel, and a bell-turret at the west end not yet completed. Externally the general face of the building is of Cowley stocks, with horizontal bands of Bath stone and red and black bricks. The jambs and heads of the windows and doorways are of Bath stone, set in a 9-inch reveal, with arched heads of red and black brick. The doorways throughout are square-headed, having stone lintels and relieving arches of red and black brick. It is intended ultimately to decorate the tympanum of each of the three west doorways with an incident from the life of Saint Paul, sculptured in the stone at present left rough for that purpose. Internally the aisles are divided from the nave by cast-iron columns standing on Portland-stone bases, and carrying arched ribs of timber. These bear the plates of the main roof, which is continued down to the external walls at a flatter pitch. Each bay of the aisles has a separate gabled roof intersecting with the main roof. The character of the principals and intermediates will be best understood from the illustration. The ceilings throughout are boarded on the under side of the rafters, and divided into panels by a moulded rib, those in each bay of the aisles following the form of the arch. The gallery trusses are carried on corbels in the wall, and small iron columns standing clear, behind the principal ones: the soffit of the galleries forms a flat boarded and panelled ceiling. A separate staircase is provided for each of the three galleries. The chancel arch is of stone, with a band of red and black bricks, forming one member of the arch mould; it is carried (as are also the principals of the chancel roof) on small shafts of red Mansfield stone, with bases and carved corbels, and capitals of Bath stone, by Mr. Tolmie, of Belvedere-road, Lambeth. The chancel is paved with red and black tiles; within the altar-rail the pavement is of encaustic tiles, presented by Messrs. Minton. The font is the gift of the architect; it is in the form of a spherical bowl encircled by a rope moulding, bearing three medallions with symbols of the Trinity. The material is Caen stone, the supporting shaft being of red Mansfield stone. The whole of the sittings, the pulpit, reading-desk, altar-rail, and altar-table, are of deal, lightly stained and varnished. The pulpit and reading-desk have stone bases.

In adopting the peculiar method of construction employed in this church, the architect has been actuated by a conviction that the generally received Mediæval type, is *not* (as every modern church *ought* to be) the building best adapted to the ritual of the Church of England, which seems to require for each individual in a congregation a view and hearing of the officiating minister, as uninterrupted as possible. An attempt has accordingly here been made to produce a building meeting these requirements, without sacrificing ecclesiastical character, or the many associations connected with the division of nave, aisles, and chancel. The church will accommodate nearly 1,100 persons, including children; and there is no sitting in the church, it is stated, from which the preacher cannot be well seen and heard. The building is lighted by three coronæ and by brackets, under the galleries, by Messrs. Hart, of Wych-street. The coronæ hang from the pendants of the principals, but are omitted in the illustration, in order to give an uninterrupted view. The whole expense, exclusive of gas, warming, and architect's commission, has been 5,467*l*., but the fence-wall and the bell-turret yet remain unfinished, and there is at present a deficiency of 700*l*. Mr. Arthur W. Blomfield is the architect Messrs. Holland & Hannen are the contractors. The church is warmed by air passing over a heated cockle, the apparatus being supplied by Mr. S. E. Rosser.

ST. PAUL'S CHURCH, HAGGERSTON.—MR. A. W. BLOMFIELD, ARCHITECT.

RIFLED CANNON.

THE CANNON MAKERS.

FOR four weeks in succession, each Tuesday night, the Institution of Civil Engineers, Great George-street, Westminster, has been crowded; the lecture-room has been full to overflowing; many members having had to leave the building on each night in consequence of there being no room, the regular seats, the aisles, the doorways, and the back stairs even having been crowded. The paper read was by Mr Longridge, "On the Construction of Artillery and other Vessels to resist great internal Pressure;" but the subjects discussed have been the Armstrong and the Whitworth rifled cannon, actual working samples of these rivals (twelve-pounders) having been placed on the table, open to the inspection of all the persons present. If there was a secret once, there is no such thing in this case now. On one evening Sir William Armstrong explained the mode of manufacture, the make, the method of working, loading, sighting, and firing, in the simplest and clearest possible language. Few men possess the enviable gifts of Sir William Armstrong. With a gentlemanly presence, a musical voice, a fluent delivery, a powerful and cultivated intellect, Sir William Armstrong is a man any nation ought to be proud of; and Lord Derby will have the honour conferred on Sir William long reflected back on himself and on his government. But to the rifled cannon subject. The gun invented by Sir William Armstrong is in appearance light and even elegant: in use it is indestructible, and in its effects tremendous. A dozen such guns at Sebastopol would have shortened that terrible contest, as every ship and steamer afloat in the harbour must have been sunk within the first week of opening fire, and the most distant buildings would have been rendered untenable. All this, and more, was explained during this interesting lecture. Sir William answered all questions put to him, and gave clearly and fully all explanations required. There was the gun, there was the inventor, with his hand upon it; and there, within arm's length, sat Mr. Whitworth, listening to all that was said, for, against, and in explanation. Sir J. Burgoyne was in the second row of seats, in the part occupied usually by the members of the Council of the Institution; and generals, admirals, and officers of lower grades, with scientific Englishmen, and many foreigners, were also present. George Parker Bidder, the wonderful calculating boy of former years, as president, occupied the chair. Sir William Armstrong explained how his gun was made, the reasons why it was so made, showed its several parts, manipulated the breech, explained the mode of loading, the several sorts of solid shot, hollow shot (shell), their mode of bursting, and their effects.

The Armstrong shot is coated with lead, to allow of its passing the rifle grooves; and this is, we think, *the* objectionable feature in this otherwise most admirable cannon. A solid iron shot cannot be turned, or, rather, returned, to any offensive use, unless it happen to fit the bore of any hostile cannon most exactly. Hundreds of tons of round shot, and fragments of shell, lay about in front of Sebastopol, and on the plains of Inkermann and Balaclava, perfectly unuseable; but if these had been fired from Sir William Armstrong's rifled cannon, the lead would all have been useable for rifle bullets; and, if ever fired against semi-savage nations, the lead from Sir William's shot will most certainly be so returned to us. This feature of the question may have escaped the notice of the Tight Barnacles at the War Department, but it deserves to be considered before the next Caffre or Indian wars commence. The leaden jacket, or coating, is necessary to Sir William's plan of rifling, and in this necessity the weakness of his invention lies.

On the Tuesday night following Sir William Armstrong's exposition, Mr. Whitworth had a full meeting, and one of his wonderful 12-pounder field-guns was on the table before him. Mr. Whitworth has neither the presence, the power, nor the fluency of his rival. Mr. Whitworth read his remarks, but neither fluently nor clearly, and this never tells with an audience. The crowd was, however, all attention and patience, and continued so to the end. The matter was interesting and absorbing, though the manner was against it. "The gift of the gab" is of great value—well used. Whitworth does not possess it.

Sir William Armstrong makes his guns of flat bars and flat rings of wrought-iron twisted and welded together. Whitworth makes his guns out of homogeneous iron or steel,—that is, iron run from crucibles into moulds, so as to form one solid, compact, homogeneous mass. Both guns are breech loaders, both have a direct passage through, from breech to muzzle, and both breeches open and close by means of levers and screws. In the Armstrong gun, the breech piece is small and moveable, and there may be any number ready to replace a lost or damaged one. In the Whitworth gun, the breech piece is heavy, and opens clumsily on a hinge, so as to be sadly in the way during loading, and liable to accident. Injury to the breech would be for the time ruination to the gun. This hinged breech is a weak point: in all besides, the Whitworth gun has a decided advantage. Homogeneous iron is better than welded iron bars, and the even bore and solid shot are far better than the lead-coated shot of Armstrong. Any enemy must possess Whitworth guns of the exact calibre, to return any of his shot, as each solid shot or shell fits to the 1-50th of an inch. It requires a power of many tons weight to force one of Armstrong's lead-coated shot through from breech to muzzle; but any child may easily push one of the Whitworth shot through his guns, the fit is so true, even, and easy. The Armstrong gun cannot be used as a muzzle-loader: the Whitworth gun can be so used, if required. The Whitworth material and *form* of bore and mode of rifling, with the Armstrong breech and mode of sighting, would constitute a perfect weapon in every respect. With such guns Great Britain will fight her next great battles, and woe be to whatever may be brought within the range of such terrible weapons:—wrought-iron plates, the thickest and strongest which can be made for any vessel to carry, as plate-mail, will be punched and perforated as if only of the consistency of cork. Shells and hollow shot of the most destructive character will pierce ships and scatter annihilation around, either above or below the water-line. No material will be able to resist the direct action of such engines. A Whitworth ball will pass through 40 feet of sand, and continue in a direct line at any angle through water. A Whitworth rifle bullet has a range of 2,000 yards, and spins on its axis at a rate of 100,000 revolutions per minute. Rope mantlets, sand-bags, or other known means of protection hitherto used, will be of no avail against such a spinning, direct, and insinuating projectile.

Monsieur Raymond may disparage the British rifled cannon as much as pleases himself and his egotistical countrymen. Sir William Armstrong—and we hope we may soon write "*Sir Joseph Whitworth*"—have made guns which require more than assertion to be proved inferior to any of French invention and make. Gunpowder cannot burst either the Armstrong or the Whitworth guns: this is about all which need be said on strength, and as to range and accuracy, these have been proved.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary general meeting of members was held on Monday, 19th inst., at the house in Conduit-street. Mr. Hussey, V.P., presided. After routine,

Mr. Penrose (honorary secretary for foreign correspondence) introduced to the meeting Mr. Kleanthes, an Athenian architect, who was, he said, the proprietor of the Parian and Verd Antique marble quarries. Mr. Kleanthes wished it to be known that the Italian marbles could be introduced in any quantity, although at some expense, in consequence of the depth of the old workings. There were in the room several specimens of Verd Antique marble, but they were not equal to those of the ancients, although if there were a sufficient demand for the article the very finest specimens could be produced. Some years ago a report had been circulated that the true Verd Antique had been found, and Mr. Burges had brought home a specimen, which, although good as far as its green colour was concerned, still was not so good as to enable him (Mr. Penrose) to pronounce it to be the veritable marble used by the ancients. The marble of which Mr. Kleanthes was the owner could be procured in columns 14, 15, or 16 feet high if necessary. The price would depend very much upon the demand, but Mr. Kleanthes was of opinion that it could be produced for 30s. a cubic foot: at all events, he was ready to receive orders at that price.

Mr. C. H. Smith said as to the Parian quarries it might perhaps be interesting to know one difference between Parian and Carrara marble for out-of-door works. The Carrara marble did not stand the weather in this country, and there was scarcely a churchyard in London which did not present examples of it in decay. Mineralogists were of opinion that Parian and Pentelic marble were of aqueous origin, but the Carrara appeared to have been subjected to great heat, and to have become a metamorphic rock. This was perhaps one reason why it would not bear the weather. An instance of the perishable nature of Carrara marble had come under his own personal notice. Some time during the reign of George the Third a statue of his majesty was put up in a niche in the arcade of the old Royal Exchange. It was taken down to be cleaned thirty years ago: it was conveyed to the premises of Mr. Bubb, the statuary, and then it was found to have a crust over it of rotten surface so extensive that it was impossible to repair it. It remained in his yard for many years. Being anxious to know what had become of it, he questioned Mr. Bubb the last time he met him on the subject. Mr. Bubb said that it had laid in his yard for many years, until a careless carter drove his cart against it and it fell to pieces as if it had been made of sand. Even the far-famed Marble Arch had not escaped the general decay, for on examining it lately he found that it was gradually perishing by the action of the atmosphere. This was not the case with Parian marble, as, with the exception of slight decomposition on the surface, the stone was perfectly sound even in buildings which had been erected 2,000 years ago.

The Chairman then announced that the next meeting would be held on the 23rd of April, on which occasion the president, if sufficiently recovered from his recent accident, would present the gold medal of the Institute, and Mr. Penrose would make some observations upon the designs for the Wellington monument exhibited at Westminster Hall.

Dr. Barlow next read a paper on symbolism in art, with especial reference to Christian art and architecture, with which our readers are being made acquainted.

In the discussion which followed,

Mr. W. White said he was anxious to testify his sense of the value of the subject to which Dr. Barlow had called their attention that evening. In his opinion, the study of Christian symbolism, as a science, was of the utmost importance, for he held that symbolism was as essential to architecture as poetry to literature or music in common life to the well-being and happiness of society. He was aware that all might not take this view of the subject, but it was his impression that symbolism was the very poetry of architecture. If this were so, the first step towards following it out was to obtain such a concise history of it as that which Dr. Barlow had given. He looked upon symbolism, not as a fanciful theory, but as the only means of conveying abstract religious truth in a form comprehensible by man. It seemed to have been universal in all ages and countries, and to be derived from antediluvian sources. He believed that in all symbolism, from the earliest period down to the present time, there were three essentials, namely, the symbolism of the divine essence, the symbolism of ritualism, and the symbolism of teaching, which all nations in all ages had carried out. The first symbolism, described by a triangle, had been so defined in all ages. One remark which had fallen from Dr. Barlow reminded him that there was a tradition in addition to the written word which was forbidden to all but the priests and keepers of the written word. This was, first, a bond of union among Christian churches; and, secondly, it was a means of preventing others from intruding; for if they could not give an explanation of the signs and symbols they would not be admitted to union. The sign of the cross was one of these symbols: it was the sign which our Lord referred to when He spoke of the sign of the Son of Man appearing. He believed that the proportional arrangement of a church,—a porch, a nave, a sanctuary, an altar, or a choir, had an effect upon those who might enter the building, although their attention might never have been called to the symbolism itself. He recommended the study of symbolism as a science, although he would not degrade it by carrying it to a fanciful extent.

Mr. Papworth was inclined to think that the paper read by Dr. Barlow contained a large amount of what they were bound to protest against—namely, an extraordinary quantity of assertion without proof. The early portion of the paper was what they would find repeated by the pseudo-philosophers of an earlier period. He protested against the manner in which an assumption started by one man was taken up by another, while a third declared that it had the general assent of mankind, and a fourth asseverated that it had always been so.

Dr. Barlow said that his assertions were based upon the highest authorities, and had no reference

whatever to Mr. Higgins, whose *ipse dixit* he had in no case relied upon.

Mr. Papworth said he believed all good buildings depended upon geometrical combinations, but he asked why should the triangle be taken and not the square? He was inclined to think it was the square that ought to be taken. There were various ways by which a hobby could be ridden to death, and this was one.

Mr. Beresford Hope said that symbolism was necessary for originality. In the broad domain of symbolism, the truth, life, and originality of all architecture was to be found, and therefore discussion upon its theory never could be useless, although it might not lead to the point which it was most desirable to obtain.

Mr. Gilbert Scott said he was no symbolist: he thought it desirable not to lay down such strict laws as Mr. White had enforced. Many ancient buildings were found to have been built on the square and others on the triangle: Westminster Abbey and other English cathedrals were specimens of the former.

Mr. G. E. Street said that some years ago, when he worked upon Mr. Scott's plans, he used to prove (not, perhaps, with the knowledge of that gentleman) that they were all based upon a scientific principle of proportion! The most common symbolism was the unconscious expression of some common object. The nave and aisle were the most convenient form that could be built, and he believed that their adoption was altogether incidental.

Mr. Penrose said he had examined both Bruges and Lincoln Cathedrals: the first was founded on the equilateral triangle, and at Lincoln the proportions were determined by squares. The ancients appeared to have been of opinion that all that was required was size and effect, and that proportion or symbolism were but secondary objects.

Mr. Godwin, V.P., moved a vote of thanks to Dr. Barlow. He had brought together a vast amount of information on the subject; and whether they were prepared to admit it all or not, as matter for thought, it entitled him to their thanks.

Mr. White seconded the motion, which was carried by acclamation.

The following gentlemen were, on ballot, elected Fellows of the Institute:—Edward Salomons, Associate, of Manchester; Edward C. Robins, Associate, of 19, Arundel-street; James Murray, of 4, Agar-street, Strand, and Coventry; and George Truefitt, of 5, Bloomsbury-square.

THE CASUAL POOR.

FROM time to time in various parts of the metropolis observers are pained with cases of distress, which, if not fortunately attended to and relieved, lead to deaths, from downright want and destitution, which ought not to happen in this the richest capital city in the world. We have before referred to this matter, and mentioned that in ten years, from 1848 to 1857, 3,292 persons perished in the London district from absolute want. It is lamentable to reflect that, during the above period, upwards of 300 persons on the average died yearly of starvation. Various causes lead to this sad result: one is, an unwillingness on the part of many to make their distress known; but, undoubtedly, a great deal of the mischief is occasioned by the manner in which the poor are relieved by many of the officers of parishes, who, in their zeal to save expense, forget the claims of humanity, and so with little consideration persons in the greatest need, who cannot prove their claim upon a particular parish, are sent hungry away without assistance or relief. In the poorer districts of the metropolis, the inhabitants are so migratory that there are thousands who cannot say to which parish they belong, and are in consequence sent without help from one part of London to another. These cases are frequently reported in the newspapers; but even from these accounts little idea can be formed of the extent to which this evil presses upon a large and struggling class. Bad as this is for those who have some regular shelter for their heads, it is worse for those without fixed habitation; and it unfortunately happens that many, both male and female, in consequence of illness, the failing of employment, perhaps from improvidence, or the commission of some offence, are prevented from readily getting work. We have met with discharged soldiers, sailors who have lost the outfit which would enable them to go to sea, and many others, who from sheer misfortune are driven to the streets, and exposed to hardships which can scarcely be conceived. These characters, bad and good, are driven by the police: the eyes of other officers are upon them: they must not beg: their condition soon becomes so bad, that even the cheap lodging-house keepers refuse them admission: hundreds of instances might be given, but two or three may be sufficient to show how the present system works.

"I met a man," says an informant, "so ill in the street, on a wet dreary night, that he seemed scarcely able to wander along. He had been engaged on a railway in France, but had been discharged in consequence of ill health: he was sent to England, and with difficulty reached London, where he had endeavoured, without success, to get into an hospital. He was hopelessly afflicted with consumption; and those in charge of the hospitals to which he applied said that it was their duty only to admit those whom they might hope to cure—that he must apply to the workhouse. This he did, but was 'like to drop in the street,'—having gone from place to place, but only met with refusal." Whatever might have brought this man to the condition he was in, there could be no mistake respecting his illness and destitution. The writer endeavoured to get him a lodging; but, seeing that the man was almost at death's door, he was not taken in. No better success was met with at the workhouse. Then the police were applied to: they could do nothing; and, but for the interest of a friend who was in charge of the Westminster Hospital, where he was admitted late at night, this man might have been left to die in the street.

We will not at present mention the workhouse gate (it is not in good repute), at which we saw a man clinging to the knocker, evidently in great distress and sickness. The circumstances were much the same as in the case above stated. He had slept in a damp bed, which had been the means of almost depriving him of the use of his limbs. He had made application at St. Bartholomew's Hospital, where he was supplied with a bottle of medicine, but he could not be admitted into the house. The man had the medicine in his pocket, but, as he said, what was the use of it when he had no place to rest in? He had made application to the officers of the workhouse, and been denied admission. Servants who have no relations in London, and who have been seized with illness, and have no legal claim on the metropolitan parishes, are often discharged from the hospitals in a weakly condition. Some even afflicted with incurable complaints are sent away after the means of medicine have been tried, but without avail: if even able to undertake the duties of the situation they have left, it will be found, in nine cases out of ten, that it has been necessary to employ some one else. Without money, without friends, their slender store of clothes, &c., is soon exhausted; they are unable to pay for their lodging; and, half clad and penniless, they are obliged to take to the street. Such is the history of several of those who may be seen crouching as if to hide from their fellow-creatures, in dusky portions of Farringdon market and elsewhere.

Experience has shown us that the duties of a relieving officer to a poor and populous parish is one of great responsibility, and beset with difficulties. The attempts at imposition are many, but it will be admitted that those who are the most troublesome have been for years accustomed to idleness, and to make the workhouses a home when the weather or other circumstance does not make it agreeable to roam abroad. Most of them have been actually reared in workhouses, and in a great measure, owing to the want of better training and more enlightened management, they have failed to become industrious and useful members of society. We have it, however, on good authority, that more than ninety in the hundred of those who apply for relief are really in circumstances of distress, and deserving of assistance. It unfortunately happens that in the poor districts there is the greatest pressure for help, and the ratepayers are there but ill able to meet the enormous poor-rate which is necessary. Some parish officers are more humane in the relief of applicants than others. Some have casual wards provided for the houseless: others, even in wealthy neighbourhoods, have none: this causes a heavy pressure upon those who are willing to do their duty. This important matter evidently merits the consideration of the congress of delegates from each of the numerous parishes which form this vast population; and in case of this body not making arrangements, the Parliament should interfere.

We ought not in these days to have cases of death from starvation. If those in dire distress have no claim upon a particular parish, there should be some means of assistance obtainable until their claims can be set forth effectually in the right quarter. In order to effect this, we would, as has been before proposed, have four or more places of refuge in London, presided over by persons of humanity and intelligence, to which persons found in the street in conditions such as have been alluded to, and who have failed to meet with attention from the authorities of the parishes in which they reside, might be directed by the police and others. Here should be provided shelter and food until the cases could be inquired into. Some might be recommended into hospitals; others put into the way of escaping from further evil by helping them to admission into reformatories: others might be cared for until friends at a distance could be communicated with. Servants, when it was found that their character would bear inquiry, might be helped to situations. Much good might be done, and such places of refuge would, to a great extent, prevent those idle persons to whom we have referred from making a trade of the imposition on many parishes. Impostors should be duly punished. Such a public institution as is here hinted at should be supported at the cost of the united parishes. Thus the jealousy and striving would be avoided, the number of deaths from starvation would be materially lessened, and numbers would, by these means, be restored to health, honesty, and usefulness. This is not a thing which ought exactly to be made a matter of money consideration; but, in our opinion, if all the expenses which are incurred by the present system were to be taken into consideration, an annual saving would be found to result.

THE STEPHENSON MONUMENT.

MR. LOUGH is making progress with the monument to George Stephenson, intended for Newcastle. Our readers may remember the group that was determined on: Stephenson, in ordinary costume, and wearing his plaid, on a central pedestal, with four figures on socles at the angles below,—representing the navvy, the miner, the smith, and the engineer. This step towards reality is an admirable one. The figures will tell their own story to the multitude, and require no gloss. Two of the figures are now nearly finished. One, the miner, with "the Geordie" in his hand, is in clay; the other, the engineer, is in plaster, ready for casting. Both have fine heads and considerable nobility. The lower limbs of the miner, however, seem to us scarcely long enough or large enough for the colossal body of the figure, and as it is still in clay, we may hope that the excellent sculptor will give this point further consideration.

Mr. Lough has bravely fought his way upwards, and many will be surprised, on visiting the studio, at the large amount of ideal sculpture which has been executed by him. They will see, too, a fine bust of Sir John Lawrence, the hero of India, and one of Robert Stephenson, made since death. Robert Stephenson had the power of attaching others to him to a remarkable extent. He had a heart as well as a head, and while his intellect and knowledge commanded respect and admiration, his fine social qualities made captive the affections. Mr. Lough is amongst his worshippers.

MEMS. FROM PARIS.

THE greatest activity reigns in the works of the Zoological Garden of Acclimation of the Bois de Boulogne, which is to be open to the public next spring. The gardens have been designed and laid out; the principal buildings indispensable to an establishment of this nature have been erected; and the interior arrangements of the dwellings for the numerous species of animals belonging to the society are to be commenced forthwith. Every day their collection receives augmentations.

A gold medal of the value of 400f. has been offered by the above society in its annual meeting of the 10th ult., to be presented on the same day in 1862 to the American or African traveller who will have rendered the greatest service to the institution by his discoveries, especially as regards human food. This prize has been given to the society by Madame Guérineau in the name of her late brother, Pierre Delalande, travelling naturalist of the Museum of Natural History in Paris, one of the principal explorers of Brazil, and also of South Africa, whose death took place on his return from the Cape, which he left in a complete state of prostration from fatigue and illness.

The Mazarin Gallery of the Imperial Library of Paris has been undergoing some improvements. Since a few days past the upper portion of the small staircase leading to the manuscript-room has been suppressed, and the remainder only serves for the department of maps and geographical collections at the entresol. The Mazarin

Gallery (communicating now directly with the manuscript study-room) is open every day to the public, who can admire the vast proportions, the noble architecture, the painted ceilings by Romanelli, and form an idea of what this grand saloon must have been in all its former splendour, adorned with paintings, sculptures, &c., the property of Cardinal Mazarin. In the first hall, in a glass case, were several precious manuscripts remarkable for their binding in sculptured ivory and tortoise-shell and silver, with figures in relief, and surrounded with stones formerly of great value. In the second room figured the important collections of Colbert, Mesmes, and the Frères Dupuy, &c. The third chamber contained Chinese books. The origin of this collection was the sending of forty-nine Chinese books addressed to Louis XIV. in 1697 by the Chinese emperor, on the demand of the Jesuits. In the library of Cardinal Mazarin there were only four Chinese books.

EXETER BRANCH BANK COMPETITION.

THE Directors of the Devon and Cornwall Banking Company, having determined in December last to erect a new Bank House in the Cathedral-close, Exeter, proposed to the following architects to send in designs in competition for the same:—Mr. E. C. Robins, London; Mr. Walter Dament, Plymouth; Mr. John Hayward, Exeter; Messrs. Hine & Godwin, Plymouth; Mr. Edward Appleton, Torquay; Mr. G. McDonnell, London; and Mr. W. H. Reid, Plymouth.

The plans were required by the 1st of February. There was no limitation as to cost. The premiums offered (quite inadequate to the occasion) were respectively, ten guineas and five guineas.

On receipt of the drawings, three designs were first selected from the nine submitted, viz.:—"M. I. B. A.," to cost 5,070*l.*; "Avise le Fin," to cost 4,200*l.*; and "Use," to cost 4,000*l.*

The design to be followed in the execution of the work was next to be determined on. The voting-papers being opened, it was found that an equal number of votes were in favour of the first-mentioned two designs; but eventually it was decided that the design marked "*Avise le Fin*," by Messrs. Kenneday and Rogers, should be carried out; that the first premium should be awarded to the design marked "M. I. B. A.," by Edward C. Robins, of London, and the second premium to that marked "Use," by Walter Dament, of Plymouth. We give these particulars as they have reached us, but do not understand the transaction. If Mr. Robins was entitled to the first premium, why is he not employed?

TEMPERATURE OF EUROPE.

THE following was the temperature (Farenheit) at the hour of 8 a.m., on the 18th inst., in the principal towns of Europe:—

Dunkirk, 46° 4′; Mézières, 44° 1′; Strasburg, 40° 9′; Paris, 46° 4′; Havre, 45° 6′; Brest, 50° 4′; Limoges, 45° 1′; Montauban, 47° 8′; Bayonne, 51° 8′; Avignon, 45° 6′; Lyons, 43° 2′; Besançon, 40° 8′; Brussels, 47° 5′; St. Petersburg, 6° 8′; Copenhagen, 35° 2′; Lisbon, 55° 9′; Rome, 44° 6′; Stockholm, 33°; Madrid, 39° 9′.

From this it appears that the temperature of Rome was *inferior* to that of the towns in France, except four, viz., Strasburg, Mézières, Lyons, and Besançon.

On the 17th, we had at Turin 44° 6′; Haparanda, 11° 48′.

On the 16th, S. Fernando, 46° 6′; Florence, 41° 9′; Moscow, 11° 7′; Kief, 14° 36′; Warsaw, 23° 0′; Helsingfort, 15° 8′.

CITY OF ELY WATERWORKS.

WE have received several replies to the statement of "Viator" in our last, all agreeing that the public works at Ely, whatever the shortcoming in certain respects, have conferred a great blessing on that city. One writer, "X. Y. Z.," with reference to obtaining water from a gathering ground, shows that the reservoir would have cost an immense sum. As to laying a main along the railway to the waterworks at Cambridge, he continues, "the distance from Ely to the Cambridge waterworks is eighteen miles, and pipes eighteen miles long, capable of supplying Ely with 330,000 gallons per day, would cost at the very least 30,000*l.*, and we would have to pay the railway company and others something like 100*l.* per mile for way-leave to lay the pipes on their land, which would be an additional 1,800*l.*, and the pipes would be liable to pay parochial rates in Cambridge to the tune of 500*l.* a year, and the Cambridge waterworks company charge 1s. 6d. per 1,000 gallons for their water, which would amount to 9,033*l.* a year. . . . . Ely can be supplied with filtered water from the river at about 1½d. per 1,000 gallons, and 330,000 gallons per day give 752*l.* a year."

A second writer says, as to the assertion that the old engine and pumps are badly contrived, "If so, the new engine and pumps must be worse, for it costs 65*l.* per cent. more money to pump the same quantity of water with the new engine and pumps than with the old engine and pumps. The duties of the two engines stand as follows:—

To pump one million gallons 140 feet high the old engine consumes—

Four tons of coal, at 16s. per ton	£3	4	0
Oil, tallow, and packing	0	12	0
Wages	0	9	0
Total cost of pumping one million gallons	£4	5	0

which gives 1d. per 1,000 gallons pumped 140 feet high (not a very high price).

The new engine requires—

Five and a half tons of coal at 16s.....	£4	8	0
Oil, tallow, and packing	1	10	0
Wages	1	2	0
Total cost of pumping one million of gallons 140 feet high	£7	0	0

which is 65 per cent. more money than the old engine requires.

The old engine has been at constant work for ten years (reckoning ten hours' work equal to one day) without anything materially going wrong with it. The new engine has been at work only a few weeks and several of the cogs have broken, and all the cogs are worn through one-third already.—DAN."

THE ARCHITECT OF CLOTHWORKERS' HALL.

AT the banquet given on Tuesday evening last to inaugurate the new Hall of the Clothworkers' Company, in Mincing-lane (illustrations of which have appeared in our pages), the Prince Consort was present, and closed the proceedings by proposing as a toast, "The architect of the new building." Sensibly drawing the difference between the two functions of an architect, that of man of business and artist, his Royal Highness said, it was evident, at any rate, in the latter capacity, Mr. Angell had happily discharged his duty. Mr. Angell briefly returned thanks, and was loudly and deservedly cheered.

THE SERPENTINE.

WE have every reason to believe that by the time of our issue the Parliamentary Committee will have put an end to the unwise filtering scheme,—though not soon enough to save much money, it is to be feared. We had drawn out some facts touching the sewers and springs in connection with the Serpentine, but it is unnecessary now to print them. A recommendation to be made to the Metropolitan Board of Works on, this, Friday:—

"That about 1,000 feet of brick sewer, 9 feet in diameter, and 4,700 feet, 8 feet 6 inches in diameter, be constructed across Kensington Gardens and Hyde Park, at an estimated cost of 23,000*l.*, the Commissioners of her Majesty's Works, &c., to contribute 2,000*l.*, provided the work be carried out in the manner proposed, and the Legislature sanction the estimate to be submitted to them,—

has in view the future purity of the water.

CHURCH-BUILDING NEWS.

Lincoln.—The west front of the cathedral, according to the local *Chronicle*, is about to be thoroughly restored, the Dean and Chapter having given directions to that effect. The scaffolding has been already erected, and the work will be immediately proceeded with.

Fordham (*Cambridgeshire*).—The restoration of Fordham Church has been commenced: the lead from the roofs has been recast, and as much of the former timber and masonry will be preserved and shown as is practicable. Mr. G. E. Pritchett, of London, is the architect; and Mr. Martin, the builder. A bequest of 500*l.* started the restoration.

Southampton.—The new Unitarian "Church of the Saviour," erected in Bellevue-park, has been opened for Divine worship. The edifice occupies a conspicuous position at the junction of the Above-bar, Bellevue, and Winchester roads. The interior of the church is 70 feet long by 32 feet wide: it is open-timber roofed, and has vestries and offices on the south side. There is an arrangement in the front of the pulpit for the deaf: in addition to the appliances for the conduction of sound, the book-board itself is constructed so as to collect and convey the sound into the sound chamber; and the pulpit canopy or sounding-board is contrived with a special view to intensify the power of the preacher's voice. The seats are arranged for the present to accommodate 300 worshippers; but the whole church can at any time be thrown open and seat 500. The warming is on a double system, and has been carried out by Messrs. Lankester. All the other contracts have been taken by Mr. G. W. Chinnock. The style adopted is Early English. The architect is Mr. P. Brannon. The carvings have mostly been executed in stone by Mr. R. C. Baker, assisted by Messrs. Grasby and Abbey; and in wood by the Messrs. Elmes, and are all designed with a special signification in relation to the great truths of the Christian religion. The symbolic expression is chiefly derived from the natural qualities of plants and animals. On the east the references are to the Redeemer as the Sun of Righteousness arising with healing on His wings, and the bright and morning star. On the north the trials and temptations of life are symbolised with the effects of the experience of the cross in the heart of the believer. On the west are references to death and the promises of a future life; and on the south the triumphs of the Church and its extension over the world. In the tympanum over the west door is an alto-relief of the sermon on the mount; and in the interior are various symbolic emblems.

Gloucester.—The Roman Catholic Church in Northgate-street, having been so far completed as to permit of the performance of Divine service, has been publicly opened. The edifice was designed by Mr. Gilbert Blount, of London, architect, and is in the Gothic style of the second period of the pointed arch. The parts at present completed are the chancel, lady chapel, sacristy, and about two-thirds of the nave and aisles; and there are still to be added, before the design will be complete, two bays of the nave and aisles, and tower with spire, and a porch. The total internal length will then be 101 feet; width, 39 feet 6 inches; and height, 41 feet. The frontal of the altar is divided into three panels, the centre containing a representation of the Crucifixion; and on either side are representations of the sacrifices of Aaron and Abraham's. The artist is Mr. Farmer, of London.

Bristol.—The intended alterations in the cathedral will be commenced on the 16th of April. ——The whole of the light tracery work which enriched the summit of St. Stephen's tower has been removed, in furtherance of the restoration: its removal, says the *Mirror*, has greatly changed the appearance of the structure. The restoration of the south side of St. Maryleport Church is progressing, and it is to be hoped that some means will be devised for lowering the churchyard wall, so as to throw the edifice open to view.

Sunderland.—The foundation stone of a new Roman Catholic chapel was laid here on St. Patrick's Day. The site is in Church-street, and the edifice will be dedicated to "our Lady and St. Patrick." It is to be erected from designs furnished by Mr. James Gilles Brown, of this town, architect. The building will run north and south with Church-street, covering an area of upwards of 680 square yards. The elevation next the street will be the only ornamental one, built of stone, sneck-pointed, with chiselled dressings. The style adopted is Early English. An octagonal sacristy, lighted from the roof, enclosed in a pointed arch, is designed at the south end, together with vestries and other adjuncts. At the north end, enclosed in another arch, spanning the whole width, will be placed an end gallery, to seat 600. The benches on the ground floor will be arranged to seat 600. The roof will be open, and stained of an oak colour.

PROVINCIAL NEWS.

Newark (*Notts*).—The execution of the interior fittings and finishings, comprised in the second contract, for Kelham Hall, the new residence erecting for Mr. Manners Sutton, from the designs of Mr. G. G. Scott, has been entrusted to Messrs. Ruddle, of Peterborough.

Sutton.—The foundation-stone of new National schools has been laid in this village. The building contains two large school-rooms, class-room, master's residence, and offices, &c. It is of Gothic design. Mr. Robert Hutchinson, of Huntingdon, is the architect, under whose superintendence the works are being carried out by Mr. G. Bunting, of Fennystanton.

Liverpool.—The project for building a new Exchange News-room goes on with promising activity, according to the *Courier*, and the support it has met with is evidenced by the fact that upwards of 200,000*l.* have already been subscribed to

the capital of the proprietary. The company is incorporated by Act of Parliament, and will have a total capital of 450,000*l*. The present Exchange-buildings and the Sessions-house will be purchased, and materially improved and beautified; while an Exchange News-room will be erected on the site of the Sessions-house and the intervening street, which will be more than double the area of the present news-room, and will contain four times the cubic capacity.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE NEW PUBLIC-OFFICES.

AT the fortnightly meeting, on 21st inst., Mr. Barry presiding, Mr. L. Hornblower exhibited and proceeded to explain the plans prepared by him for the Corporation Public-offices. He said the building was in the French-Italian style, with a granite rusticated basement; in fact, he had tried as much as possible to retain the appearance of the old Town-hall in the centre of the building. It had ground-floor windows, carved and moulded dressings, and keystones, surmounted by Corinthian coupled columns detached, carrying a Corinthian entablature with balustrade and dormor lights. In the centre was carried up another series of columns carrying an entablature and square dome, with ornamental and enriched crest. The front was enriched with panels charged with carving, showing the shields of the various mayors of the town of Liverpool. The plan of the building was a parallelogram of 225 feet by 175. In the centre of the building there was the council-chamber, 80 feet by 40, and 40 feet high, with an entrance from it to the mayor's room, and five committee-rooms, 38 feet by 21 feet 6 inches, and 32 feet high. Above he had a space of 800 feet, and had arranged the rooms 22 feet high and 22 feet wide, as a picture-gallery (in the centre of the town), with lights suitable for pictures. The cost of the entire building was estimated at 80,000*l*.—Mr. Hayes, after a few general observations, asked why the borough engineer should be overloaded with duties of this sort, when there were men in the profession, living by that profession, quite able to stand on the platform of the borough engineer upon an architectural matter? He was of opinion that the designs for the public offices ought to have been put out to general competition, or at least a competition limited to the profession in Liverpool. He moved, "That a committee be appointed by the society to memorialize the Town Council at once on the point that, if public offices are to be built, the designs should be thrown open to general or private competition." This, with the understanding that the council would prepare a resolution to be laid before them at the next meeting, was carried unanimously. The paper for the evening was on "Measurement and Quantities."

MODERN CONSTRUCTIONS.

IT surely is not necessary, where *strength* is required, to have *ugliness* as a co-partner.

What are we to say of the iron railway bridges that positively *disgrace* and disfigure the outskirts of London in every direction? Surely no scientific man will tell me that in order to make a bridge sufficiently strong to carry a railway train, or two together, if necessary, over a span of some 40 feet, it is necessary to have a heavy, unornamental, dead weight of dismal-looking iron, with *apparently* a sufficient quantity of metal to make a gun-boat or floating battery impregnable. I say "*apparently*," to give the benefit of the doubt to all who may have had the misfortune to be in any way concerned or responsible for the erection of such unsightly structures, because although I feel quite confident that they contain far more metal than was necessary, still it is also a great fault to have the appearance of being too heavy, even if it can be proved that a building be sufficiently light.

What should we say to a tower or steeple that looked top-heavy, although there might not be the least fear of its falling down?

We often rail at those who went before us for the enormous excess of material used in building, and we boast that, enlightened by the aid of science, we can calculate pretty nearly the quantity of a given material which it is necessary to employ to do any particular duty. This is true; but how have we availed ourselves of it in the cases I am alluding to? Be that as it may, I cannot help saying that anything more frightfully ugly than these bridges I have never seen.

In a recent trip which I took to London, I was greatly horrified by many *disimprovements* which our metropolis has undergone during the last ten years, so I resolved to write to you on the subject, taking my text from the changes that had taken place in the town, just as Shakspeare did, in the country: find "tongues in trees; books in the running brooks; sermons in stones; and good in everything."

I had lately seen the Sitter Bridge, which I gave you a description of some years ago. It is a high level bridge near St. Gall, in Switzerland. It is a most beautiful thing—light, airy, and fantastic, but, nevertheless, strong and substantial. It beautifies the beautiful scenery round about it. There are various other bridges of the same kind in Friburg, in Savoy, in Italy, and in France. We have some fine bridges ourselves. The Menai-bridge, built by Telford, is light and elegant: Southwark-bridge deserves to be praised for the taste of its design; and Canova said that Waterloo-bridge was a most perfect work. Why, then, should we be hemmed in by such wretched ramparts of cast-iron, designed in worse taste than the most monstrous Egyptian mummy-houses?

Again, our constructions in iron and glass are not good.

I am not going to make a sweeping objection to such buildings: on the contrary, I think them a very suitable style of building for certain purposes; and you may remember I once proposed to have our flagways covered in with glass roofs supported upon iron columns, so as to form covered ways on each side of the streets, thus to shelter the passengers from rain and snow in winter, and, by covering the glass with brown holland in the summer, to form continuous porticos as a protection against the sun. What I object to in what has been done is the complete absence of all taste.

I see now that there is to be a Great Northern Palace, or People's Palace, and I hope to goodness that this time we may have something pleasant to look at. All materials may be lawfully used. The world is not to be *restricted* for ever to stone and mortar, nor to the "original orders" of the ancients. Glass and iron may be legitimately used occasionally, and can be made as ornamental as they are useful: *but let them be put together with taste or not at all.*

I see that the view of St. Paul's Cathedral from Cannon-street is being shut out by a horrible pile of buildings erected to economize the value of a triangle of ground: could no body, or guild, or corporation, in wealthy London, be found to indemnify the proprietors, and save the view *pro bono publico?*

Really, when we look at Paris, and many other Continental towns, where so much more taste is exhibited, we are tempted to ask, what is the value of our boasted wealth if we do not know how to employ it?

The miser that locks up his gold, and lengthens out his wretched life by a bare subsistence, neglecting to provide proper nourishment and necessary raiment out of his hoarded and useless treasure, is not more to be pitied than those who for want of taste expend large sums of money for themselves and others, in perpetuating their own incapacity in the shape of huge monuments, devoid of æsthetic beauty, elegant proportions, or correct style. To such an architect one cannot help saying again and again,—

> "Lie heavy on him Earth, for he
> Laid many a heavy load on thee."

It is good there is a journal like yours by way of a "*safety-valve*," or I do not know what I should do. WM. H. VILLIERS SANKEY.

THE CONDITION OF ARCHITECTURAL CARVING.

A CORRESPONDENT, who writes from the cathedral works at Hereford, has addressed some observations to us on the circumstances under which much of our carving is done (a subject before now referred to by us) and the results that follow.

"The intolerant usages of barefaced competition," he writes, "are carried to fearful excess, and are the very rock on which art in general is foundering. Architects oftentimes forget that the solidity and beauty of their buildings are the very basis of their reputation: they make a design for this or that: it is contracted for generally; and the contractor, a man of business, not often knowing or little caring how the decorations should be done, relets the carving to him that will do it cheapest. It is proceeded with, the price scarce permitting time for thought;—the architect and the carver, perhaps, never seeing each other during the progress of the work. Thus the original design, if any, is entirely lost sight of. The carver is poorly compensated, the architect when he has seen the work is chagrined, and the public are disappointed of good work.

Should Englishmen, in their pride of rivalry with other nations, allow the boasted arts of their forefathers to dwindle into insignificance,—should the glorious examples of the Greeks, the Romans, the Mediævalists, be allowed to go for nothing, while the pockets of contractors are being filled with the profits of the public loss, and the deserving artist becomes the tool of ignorance?

We earnestly appeal to architects to assist us in rescuing genius from the fetters of ignorance and folly, and to have their carving better done and by competent men.

Men of little skill suit the builder's ideas best, and find employment, while clever men are half their time idle: the consequence of the system is, the public become so accustomed to indifferent work, that they do not like to pay more for better. We have those whose souls are wrapt in the beautiful studying old examples, and searching among hedgerows and gardens for the truth of nature. But until the hand of liberality is stretched forth to welcome them, and until architects hold more approximate conversations with carvers for the interpretation of ideas, and the baneful custom of so much per cube is entirely abandoned, we shall have no improvement in our works.

C. J. HERLEY."

THE STONE OF THE NEW HOUSES OF PARLIAMENT.

SIR,—I cannot permit the remarks of Mr. C. H. Smith, in your journal of the 17th instant, with reference to the decay of the stone used in the erection of the New Houses of Parliament, to pass unnoticed, lest it might be inferred that his charge of neglect, in the selection of the stone in the quarries, was justified by my silence on the subject.

Mr. Smith is pleased to justify his selection of the Anston stone, as the stone of all others best calculated to withstand the effects of the London atmosphere, because it has resisted for some centuries the atmosphere of Yorkshire, its natural element, in several of the old churches in the neighbourhood of the quarries; and, consequently, it would have stood equally well in London, had greater care and supervision been used in its selection.

If that be so, and if this especial supervision be considered necessary, how comes it that Mr. C. H. Smith and the commissioners did not recommend, *at the onset*, that a practical chemist should be resident at the quarries to determine which beds of the stone would resist the London atmosphere, and which would not? For I deny that any practical mason, even Mr. Smith himself, had he been the party selected for the purpose, could have undertaken to decide this point.

For myself I have no hesitation in saying, that the greatest care and anxiety were evinced by all concerned in the quarry, that no stone of an inferior quality should be sent to London. My own character and reputation, and that of my late partner, as builders, were at stake; and it is not likely, after an experience of some thirty years, that we should be disposed to jeopardize them in so important a building as the New Houses of Parliament.

It is a satisfaction, however, to know that during a period of upwards of fourteen years, during which I had the honour to be concerned in these works, I am not aware that Sir Charles Barry, or his numerous assistants, had occasion to reject any of the stone as inferior or unfit for the work. To all outward appearance the stone which has failed was, before being fixed in the building, as sound and as suitable as that which remains sound; and up to the period when I ceased to be concerned for the Government, about seven years since, the only stone which had showed symptoms of decay was that which had been used in the under surfaces of string-courses and cornices, while that which had been thoroughly exposed to wind and weather, particularly the plain surface, was perfectly sound.

I may state also, that the stone supplied for the Museum of Economic Geology, and the Amicable Assurance Office, to which Mr. Smith refers with some exultation, came from the same quarry as the Houses of Parliament stone, and without any greater care, or particularity of selection; and the stone supplied to the buildings in Lincoln's-inn, which it seems has suffered most, was expressly selected by a practical mason, sent from London by the authorities who had charge of those buildings.

In conclusion permit me to say, that I think it would have been more becoming in Mr. C. H. Smith, had he adopted the reasoning of Professor Ansted, who says, truly,—"So long as these stones

were crystallized, they were the best stones that could be taken, and the specimens examined in the churches in the neighbourhood of the quarry selected went to prove this; but, unfortunately, the quarry from which the churches had been taken was not found to be in such a state as to supply so large a quantity as was required for the Houses of Parliament, and they were obliged to go to another quarry in the same neighbourhood, which was not of the same quality of stone as that which had been experimented upon by the commissioners, and no doubt this was the correct history of the matter,"—instead of endeavouring to shift the responsibility from his own shoulders to those of the quarrymen and contractors, who know well, and as everybody else knows at all conversant with building stone, how extremely difficult it is, if not impossible, in this country, to discover any stone which will, under all circumstances, resist the effects of time and atmospheric influence.

Palace Gardens. T. GRISSELL.

PATENTS CONNECTED WITH BUILDING.*

LOCKS AND KEYS.—*R. A. Brooman*, Fleet-street, London. A communication. Dated August 17, 1859.—This invention cannot be described without reference to the drawings.

BRICKS, TILES, &c.—*W. Wilson*, Glasgow. Dated August 18, 1859.—This invention relates to the manufacture or production of bricks, tiles, and other articles of earthenware, according to a novel system or principle as regards the primary preparation and subsequent treatment of the clay used in the manufacture, and to the arrangement and construction of the preparing and moulding machinery used in the actual preparing and moulding or shaping processes. According to this system the clay-pit, or field, whence the raw material is to be obtained, is covered over with a temporary roof or house, so as to defend it from the weather. The top or useless crust of the clay stratum being removed, the clay itself is dug up in blocks, and turned over to allow it to dry, the mass being merely roughly disintegrated. In this condition the clay is allowed to remain until it is wanted, or is ready for use, being kept free from the action of rain and frost. And to improve this preparatory treatment hot-air flues or pipes are passed through the clay-house, such flues or pipes being in communication with the waste heat discharge-flues of neighbouring brick-kilns or furnaces, or other sources of heat. By adopting this system of primary preparation, bricks are made in the way described in the patent both in winter and summer.

Books Received.

Memoirs of Early Italian Painters, and of the Progress of Painting in Italy. By Mrs. JAMESON. A new edition. London: John Murray. 1859.

THE lamented death of Mrs. Jameson, to whom Art and Social Science owe much, chides us for delaying notice of this much enlarged edition of her "Memoirs of Italian Painters," first issued about fourteen years ago. It commences with Cimabue, who died about 1302, and runs on to Paul Veronese, who died in 1588, and Bassano, who lived till 1592. Mrs. Jameson in her introduction properly says, that the first question on looking at a picture should be—What does it mean? What is it about? We should first endeavour to understand the work, and have delight in it for its own sake. When this is done we may inquire the name of the painter, the school of art to which he belonged, and so derive the most various delight from the associations connected with this extended knowledge. To enlarge this sphere of rational pleasure these memoirs were projected, and the task has been carried out with elegance and taste. The story deals with great names, a Leonardo, a Michelangelo, a Titian, a Corregio, and, greater than all, a Raffaelle, who, as "Pamela"—Richardson says, "was one of the politest, best-natured gentlemen that ever was, and beloved and assisted by the greatest wits and the greatest men then in Rome." Of Leonardo, Mrs. Jameson writes,—

"Leonardo da Vinci seems to present in his own person a *résumé* of all the characteristics of the age in which he lived. He was *the* miracle of that age of miracles. Ardent and versatile as youth; patient and persevering as age; a most profound and original thinker; the greatest mathematician and most ingenious mechanic of his time; architect, chemist, engineer, musician, poet, painter. We are not only astounded by the variety of his natural gifts and acquired knowledge, but by the practical direction of his amazing powers. The extracts which have been published from MSS. now existing, in his own handwriting, show him to have anticipated, by the force of his own intellect, some of the greatest discoveries made since his time."

When Raffaelle died at the age of thirty-seven, he left behind him 287 pictures, 576 drawings, and a fame that has filled the universe. Of this great and harmonious genius,—

"His heavenly face, the mirror of his mind;
His mind, a temple for all lovely things
To flock to, and inhabit,"—

Mrs. Jameson is never tired of talking; nor can she find any language too strong to express her admiration.

The book is intended for young travellers, young students in art, and young people generally, and will be found delightful by all. It contains numerous illustrations, but some of them are not worthy of the work. Looking at the first impression, from a metal plate, the Pax of Maso Finiguerra, 1452, of which a copy is given in the Memoirs, it may be asked: What real advance have we made in the art of engraving?

VARIORUM.

"STEAM Boiler Explosions," by Zerah Colburn, of New York (Weale, 59, High Holborn), is an extension into the form of a thickish pamphlet of a series of leading articles in the *Engineer* journal. "All our knowledge of boiler explosions goes to show," remarks Mr. Colburn at the close of his pamphlet, "that however possible it may be to accumulate an excessive pressure within the boiler, the actual explosion results, in the majority of cases, from some defect, either original or produced, and either visible or concealed, in the materials, workmanship, or construction of the boiler;" and "public safety," as he observes, "requires the frequent and systematic examination of all boilers, so that, as under the system of inspection which is in operation with such excellent results at Manchester and Huddersfield, defects may be discovered and remedied, in most cases before actual danger has been incurred."——On the subject of Metropolitan Tolls, a "Memorial presented to the Right Hon. Sir George Cornewall Lewis," the Home Secretary, by 407 public companies, merchants, tradesmen, and other metropolitan residents, has been printed for the Toll Reform Association, 19, Strand. The Home Secretary, we are glad to observe, has promised to bring in a bill to abate the nuisance of toll-gates and side bars, by which the metropolis is hemmed in, and its inhabitants made to "stand and deliver," on all sides. It is so long since the Government promised to do something in this matter, however, that we should like to see the "Act" which is to put an end to the evil before we believe in its advent. The threatened visit from "Rebecca" may be requisite to jog them on to act in earnest in the matter.——"Beeton's Book of Household Management, edited by Mrs. Isabella Beeton" (Beeton, Bouverie-street), appears to be an excellent compendium for the instruction and guidance of the young housewife: although a considerable portion, doubtless, is compilation, the editor must be possessed of good practical ability. The work is nicely got up, with many good little cuts, to illustrate the various subjects treated of. It will comprise from fifteen to eighteen monthly parts, at 3d. each.——Beeton's "Dictionary of Universal Information" (Beeton, Bouverie-street) has reached to about the close of letter F. So far as regards names of persons and places chiefly, this work contains a good deal of condensed and useful information; but those who expect "universal information" from it, as its progress more clearly reveals, will be sadly disappointed: its leading title is a decidedly misleading one, which the underlying acknowledgment that geography, biography, mythology, and so on, comprise what it is made up of, certainly does not justify.——The "Boy's Own Magazine" (Beeton, Bouverie-street), Nos. 1 and 2 of vol. vi., is an attractive-looking little twopenny magazine of instruction and entertainment, which seems to be very well adapted to please the boys.

Miscellanea.

CAMBRIDGE ARCHITECTURAL SOCIETY. — On Thursday evening, March 22nd, the rev. the president in the chair, Rev. H. R. Luard, Trinity College, made some remarks concerning the Congress which it is proposed to hold in Cambridge at the close of the Easter term. Mr. J. W. Clark then read a paper upon "The Roman Catacombs." Illustrations were shown of the curious chapels found in them; but the description of the decoration and colouring of these was left for a future lecture.

ASPHALTE ROOFING.—At the last quarter-sessions for Gloucestershire, the subject of the asphalte roof of Cirencester armoury caused some discussion. It appears that the roof was constructed of asphalte or "mineral lava," at a cost of about 300*l.*; but, having been a constant source of trouble and expense, the firm by whom it was laid was consulted as to its renewal, and their estimate of the expense was about 200*l.*, for which sum they guaranteed to keep it in repair for four years. The chairman said asphalte was used against his wish, as there was great difficulty in making it act satisfactorily, unless the roof overhung the side walls of the building, owing to the asphalte shrinking at its junction with the walls. The subject was referred to the police committee.

ARBITRATION.—CUTHBERT *v.* ATKINSON.—This action, the *Northern Counties Advertiser* says, which has long been pending, and created a considerable degree of interest, has been settled by arbitration. The dispute arose as to the right of the defendant building on the party-wall and on the ground behind his house, situated in the village of Tynemouth, and adjoining that of the plaintiff. The arbitrators were Mr. George Rippon, J.P., of North Shields, on behalf of the plaintiff, and Mr. J. E. Watson, architect, Newcastle, on behalf of the defendant, the third arbitrator chosen by them being Mr. Green, architect, Newcastle. After examining a number of witnesses on both sides the award has been made in favour of the defendant, the plaintiff to pay all costs, both of the arbitration and the action.

WORKS AND PUBLIC BUILDINGS.—The accounts of the receipt and expenditure of the Commissioners of Works and Public Buildings for the year ended March 31, 1859, have been published. The receipts for the year were 1,168,964*l.* 17s., and the expenditure 639,662*l.* 19s. 6d., leaving a net balance of 529,301*l.* 17s. 6d. Of the money expended, 47,238*l.* 19s. 11d. was paid for the maintenance and repairs of royal palaces; 100,131*l.* 9s. 5d. for public buildings, which includes such items as 9,240*l.* 1s. 6d. for gas, oil, soap, candles, and other house articles, and 9,436*l.* 16s. 2d. for coals and firewood. The royal parks and gardens absorbed 90,031*l.* 11s. 10d., and the new Houses of Parliament, 87,210*l.* 10s. 9d., of which latter sum 5,315*l.* 3s. 11d. was for warming, ventilating, and lighting; 6,673*l.* 13s. 11d. for gas, oil, lamps, and fuel; 8,758*l.* 11s. 4d. for supply and repair of furniture, fittings, &c.; 2,345 12s. 10d. for commission to Sir C. Barry, and 2,255*l.* 6s. 8d. for payment on account of the great bell and four quarter-bells for the clock-tower. The new building works, fittings, &c., of the British Museum cost 32,624*l.* 8s. 4d., of which sum 9,446*l.* 0s. 11d. represents the amount required for the new reading-room and library. Last, but not least, come the expenses of the Office of Works and Public Buildings itself, including salaries, &c., amounting to 26,050*l.* 12s. 4d. The above expenses, with other smaller sums too numerous to mention, make up a total of 639,662*l.* 19s. 6d.

A BATH AMATEUR.—Mr. Empson, of Bath, writing of the death of his townsman, Dr. Richard Taylor, in his ninetieth year, says:—His father, John Taylor, esq., was one of the best amateur artists in the kingdom. His house, in the Circus, was very popular, from the number of works of art, which the proprietor's taste had rendered especially attractive by their elegant arrangement. The house was freely shown to strangers visiting Bath, on condition, however, that no money should be given to the servants: if this rule were ever violated, the privilege hitherto granted was to cease. A member of the royal family, during the time when Queen Charlotte lodged in Sydney-place, gave a guinea to the butler. This the master heard of, and put his orders into force so stringently, that from that time none but personal friends saw the gallery. Mr. Taylor was a very intimate friend of Gainsborough, and once, for a considerable wager, painted a picture in competition with that great artist. The judges were selected from amateurs and professional artists; the subject, a composition with landscape and architecture. The committee decided that the foreground of Mr. Taylor's picture was the better, and that the background of Gainsborough's painting claimed preference. So the result was a drawn wager. We know not what has become of Gainsborough's picture: that of his rival is bequeathed, we understand, by Dr. Richard Taylor, to her Majesty. Some of Mr. Taylor's subjects have been admirably engraved by Lorpiniere, from pictures now at Windsor Castle, presented to King George III., by Mr. Taylor, on whom his Majesty wished to confer the honour of knighthood.

* Selected from the *Engineer's* lists.

OPERATIVE BUILDERS.—The operative builders of the Wigan district have addressed their masters, requesting an advance of wages of 6d. per day, which they allege is necessary to place them on an equal footing with the workmen of other towns. They ask that it may be granted them from the 2nd of April next.

FALL OF A RAILWAY ARCH. — On Saturday, about one o'clock, one of the newly-formed arches for the Exeter and Yeovil line of railway, in the York-road, Lambeth, fell in with a tremendous crash. The labourers, about 200 in number, were at dinner at the time, and thus fortunately their lives were saved. The recent damp weather was the supposed cause of the accident.

ARCHITECTURAL DISCOVERIES AT WARRINGTON PARISH CHURCH.—The work of restoration has gone on rapidly. A few days since, on sinking the floor of the nave for the introduction of the apparatus for heating the church, four very interesting stone capitals of pillars were discovered at the depth of 2 feet from the surface, and along with them a grotesque stone corbel-head. These remains are said to be of the date of the middle of the twelfth century.

CHURCH-NEWS FROM INDIA.—At Hosungabad, the small civil and military station at the western frontier of the Saugor and Nerbudda territories, a church is now to be built, by private subscription. A considerable sum has already been collected for the purpose, and a design, not after the Indian order of architecture, has been furnished by Mr. Whittaker, one of the contractors for the new railway. For the Memorial Church, which is to be built at Cawnpore, upwards of Rs. 30,000 have been collected.

ST. MARTIN'S SCHOOL OF ART, CASTLE-STREET, LONG-ACRE.—On Monday evening an exhibition of the drawings of the students of the school was opened. The school inspector has awarded twenty-four local medals, and nine drawings have been selected for the national competition. The following are the names of the competitors:—Miss Von Hurmer, Mr. Trego (two drawings), Mr. Drew, Mr. Rouch, Mr. Glenny, Mr. Willson, Mr. Parker, and Mr. Dixon.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. C. C. Nelson having expressed his intention of retiring from the office of honorary secretary in May next, it has occurred to various members that some testimonial should be presented to him, to mark the obligations of the members for the very efficient manner in which he has discharged his responsible duties for some years, and the many advantages which have resulted from his services. A meeting is to be held on Tuesday evening next, the 3rd of April, at 8 o'clock, at the rooms of the Institute, to consider the proposition, when Mr. Sydney Smirke, R.A., will take the chair.

THE CONSERVATIVE LAND SOCIETY. — The thirtieth quarterly general meeting of this society was held at the offices, in Norfolk-street, Strand, on Tuesday, the 27th inst., Viscount Ranelagh in the chair. The report of the executive committee, read by the noble chairman, showed a large increase in the business returns; the receipts for the quarter being 17,883*l.* 13s. 9d., making an increase for the half-year of 1860 over 1859 of upwards of 13,000*l.* The total receipts amounted to 442,870*l.* 1s. 4d., and the sale of land to 237,173*l.* 18s. 11d. The allotment of the Roman-road estate, at Old Ford, had resulted in the sale of all the higher-priced plots.

MONUMENTAL: THE BUNYAN MONUMENT.—A meeting has been held at the Freemasons' Tavern, Great Queen-street, Lincoln's-inn-fields, under the presidency of the Earl of Shaftesbury, to consider as to raising a metropolitan monument to John Bunyan. The meeting was attended by many gentlemen of influence in the Established Church and Dissenting congregations, and a resolution was agreed to unanimously, to the effect that a statue to the memory of Bunyan shall be erected by public subscription in one of the leading and most public thoroughfares in the metropolis.

MASTERS AND OPERATIVES.—The select committee appointed by the House of Commons to inquire into the best means of accommodating differences between masters and workmen met, on the 21st March, for the first time; Mr. Mackinnon in the chair. The other members of the committee are Lord Robert Montagu, Sir J. Fergusson, Sir J. Paxton, Sir S. M. Peto, Mr. Walter, Mr. W. Ewart, Mr. Buxton, Mr. Cochrane, Mr. Hutt, Mr. Ingham, Mr. P. Urquhart, Mr. Slaney, Mr. Trefusis, and Mr. Ayrton. Mr. Humphreys, of Kentish Town, financial secretary to the National Association of United Trades, was the first and only witness then examined, and gave his evidence in favour of courts of arbitration.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—The second *conversazione* of the season of this society was held last week at the Portland Gallery. Mr. J. Heraud opened the evening's proceedings with a paper on "The Ideal in Art," after which a performance of music took place, conducted by Dr. James Pech. The vocal department included Madame Enderssohn, M. Depret, and the London Quartett Glee Union.

DURHAM CATHEDRAL.—A discovery has been made during the restoration of the great central tower of this edifice, now in progress. The corners of the tower finish at the top with solid masses of stone, which are believed to be the lower portions of large pinnacles that were never built; and, on removing the covering of cement from the inner surfaces of these masses, certain incisions have been found, which have led to the supposition that the tower was originally intended to be terminated by a lantern.

TENDERS

For alterations to Wrotham Park, and New Lodge, for Viscount Enfield; Mr. H. Clutton, architect:—

Mansfield	£4,835 0 0
Myers	4,825 0 0
J'Anson	4,787 0 0
Pritchard	4,470 0 0

For New Church, Slingold-street, Horsham; Mr. Benjamin Ferrey, architect:—

Piper	£4,000 0 0
Myers	4,071 0 0
Ayres	4,065 0 0
Sherbone	3,756 0 0
Holland	3,745 0 0
Dove	3,520 0 0
Carr	3,308 0 0

For alterations, additions, &c., at Great Blacke Hall, near Wanstead; Mr. R. Kerr, architect:—

Asford	£3,985 0 0
Ashby	3,890 0 0
Mansfield	3,715 0 0
Myers	3,700 0 0
Jackson & Shaw	3,455 0 0
Conder	3,266 0 0

For erecting and finishing a Dwelling-House, at Wimbledon; Mr. B. A. C. Herring, architect. Quantities supplied:—

	For one House.	If two Houses.
Hammon	£1,916	£3,800
Turner & Sons	1,803	3,566
Marsland & Son	1,745	3,395
Macey	1,654	3,278
Downs	1,630	3,180
Browne & Robinson*	1,597	3,147

* Accepted.

For New Buildings, at St. Augustin's, Ramsgate; Mr. Pugin, architect. Quantities supplied by Mr. Marples:—

Walton	£3,900 0 0
Smith	3,849 0 0
Brown	3,680 0 0

For alterations, &c. at Chelsea Workhouse; Mr. G. Handford, architect. Quantities supplied:—

J. & C. Todd	£2,297 0 0
Rudkin	2,195 0 0
G. T. Smith	2,163 0 0
Godbolt	2,158 0 0
G. Todd, Jun.	2,143 0 0
McLennan & Bird	2,122 0 0
Adamson & Sons	1,931 0 0

For Warehouse, at Camden-town, for Messrs. C. Goodall & Son; Mr. Thomas M. Rickman, architect. Quantities supplied by Mr. Arthur Cates:—

Jackson & Shaw	£1,505 0 0
Evans, Brothers	1,375 0 0
Browne & Robinson	1,347 0 0
McLennan & Bird	1,340 0 0
R. Batterbury	1,335 0 0

For New Church, Kingston Vale; Mr. Christian, architect:—

Myers	£1,950 0 0
Mason	1,935 0 0
Bird	1,910 0 0
Higgs	1,881 0 0
Smith	1,868 0 0
Holland	1,853 0 0
Mills	1,750 0 0

For the commencement of the New Academy building, at St. Mary's College, Oscott, near Birmingham; Mr. E. Welby Pugin, architect. The quantities supplied by Mr. Marples:—

Gascoyne	£1,240 0 0
Hardwick	1,050 0 0
Smith	999 0 0
Branson & Gwyther (accepted)	990 0 0

For a Warehouse, at Rochester, Kent, for Mr. H. Ringe; Mr. J. H. Andrews, architect:—

Cronk, Rochester	£306 0 0
Collins, Chatham	283 0 0
Spicer, Strood	231 10 0
Lilley, Strood (accepted)	225 0 0

For the erection of a House, at Rainham, Kent, for Mr. W. Moss; Mr. J. H. Andrews, architect:—

Spicer, Strood	£575 0 0
Naylar, Rochester	530 0 0
Jennings, Rochester (accepted)	449 0 0

For Works to be done at the Jews' Free Schools, Bell-lane, Spitalfields; Messrs. Tillot & Chamberlain, architects:—

Jennings	£476 0 0
Ashby & Sons	332 0 0
Prichard & Son	322 10 0
King	251 10 0

For alterations and additions to the Bacchus Tavern, Hoxton; Mr. H. J. Hammond, architect:—

Lovitt	£276 10 0
Maeers	273 0 6
Pask	260 0 0
Starkey	259 0 0

For Abingdon Cemetery; Poulton & Woodman, Reading, architects:—

	No. 1. Chapels and Lodge.	No. 2. Boundary Walls.	No. 3. Laying Out.	No. 4. Railing and Gates.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Chesterman	1,481 10 10	501 5 2	114 2 6	37 1 9
Orton & Child	1,394 0 0	425 0 0	200 0 0	75 0 0
Thomas	1,420 0 0	403 0 0	197 10 0	71 0 0
Young & Co.	1,350 0 0	512 0 0	.....	.....
S. & S. Orchard	1,349 0 0	249 0 0	249 0 0	.....
Drew	.....	555 0 0	.....	.....
Dalrymple	.....	388 0 0	305 0 0	.....
Kimber	.....	.....	.....	179 18 6
Williams&Biven	.....	.....	.....	100 0 0
Randall & Co.	.....	.....	.....	91 0 0
Hernulewiez & Co.	.....	.....	.....	85 0 0
Copeland	.....	.....	.....	82 10 0
Grafton	.....	.....	.....	77 0 0
Hill & Smith	.....	.....	.....	68 3 5
Shaw*	.....	.....	187 8 6	.....
Jones*	1,107 12 0	283 8 0	.....	77 0 0

Bowler	£2,684 0 0	for No. 1, 2, and 3.
Walters	2,075 2 6	for No. 1, 2, and 3.
Beckensell	1,996 0 0	for No. 1, 2, 3, and 4.

* Accepted.

TO CORRESPONDENTS.

M. A. W. (we cannot undertake to square dimensions).—F. R. W.—B.—N.—W. R. — C. G. — L. de V. — J. C. P.—S. O. B.— Ely.—J. E. I.—G. H. — T. R. — R. T. S. — J. D. — E. R.—B. L.—T. C. (next week).—W. B.—A. B. T. (not received in time).

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[ADVERTISEMENT.]

THE CHARGE AGAINST MR. HEATH.

"Union Dock, Limehouse, March 21, 1860.

SIR,—We beg to assure you that it was entirely without our sanction or knowledge that you were taken into custody upon the charge of receiving timber which had been stolen from us, knowing it to have been stolen; and we quite concur in the remark made by Mr. Selfe, the police magistrate, in dismissing the case, that the transaction leaves no imputation whatever on your character.

We sincerely regret that you should have been subjected to a charge of the kind, and we are ready to testify our exoneration of your character by the permission to publish this letter.

Understanding from our solicitors that the costs incurred in procuring your discharge amount to 25*l.*, we herein enclose a cheque for that amount.—We are, sir, your obedient servants,

HENRY FLETCHER, SON, & FEARNALL.

To Mr. George William Heath, of Bishopsgate-street, London, Builder."

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TO ARCHITECTS, CIVIL and MECHANICAL ENGINEERS, &c.—Mr. C. B. RICHARDS begs to give notice, that he has REMOVED his OFFICES from Trafalgar-square to ALBEMARLE STREET, PICCADILLY, where he continues to prepare Competition, General and Mechanical Drawings, Details, Specifications, Perspectives prepared from sketches, and notes naturally and most effectively coloured, with landscape and foreground. Mr. R. publicly declares his intention to refrain from personally competing; and all communications with which he may be favoured will be deemed strictly confidential.—29B, Albemarle-street, W.

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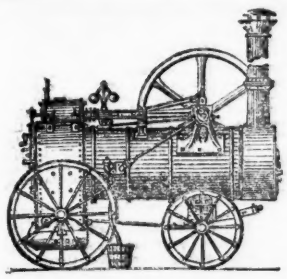

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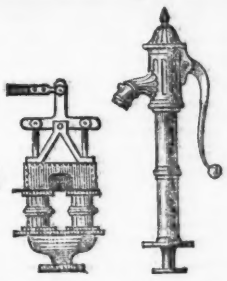

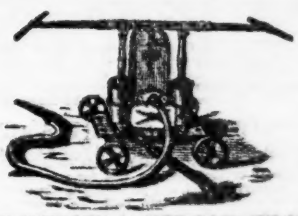

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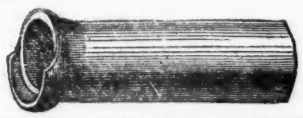

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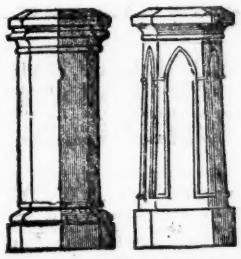

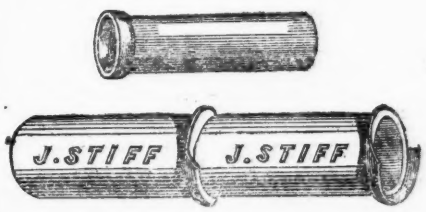

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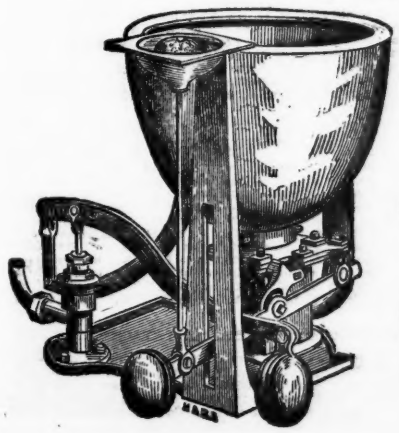

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THE ONLY EFFICIENT VALVE

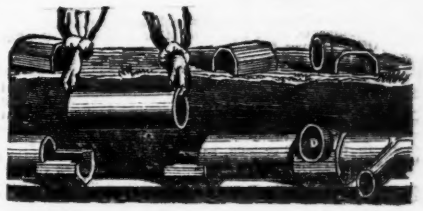
FOR

SUPPLYING CLOSETS WITH WATER WITHOUT THE COMPLICATED ARRANGEMENT OF CRANKS AND WIRES.

The "Great Eastern" has been fitted with these Closets, and hundreds are now in operation in many large establishments in the metropolis.

H. T. & Co. solicit an inspection at the Manufactory, where they may be seen in operation.

JENNINGS'S PATENT SEWER-PIPES.



ROBERT BROWN, FERGUSLIE FIRE-CLAY WORKS, Paisley, now holds the exclusive right from the Patentee to MANUFACTURE and Sell these now universally admitted superior PIPES in all Scotland, with the liberty to sell in Ireland (county of Cork excepted), and in foreign countries.

Prices, Diagrams, Models, and all further information furnished on application.

"WRIGHT'S PATENT" SELF-ACTING WATER-CLOSET.

This Water Closet is so constructed as to be free from all the defects of the Water Closets in general use. It is simple in construction, and perfect in action, can be readily fixed by any ordinary plumber, and does not easily get out of order.

It is self-acting, and its action is equally certain, whether used by children or grown-up persons.

It has no pan and receiver with their accompanying cranks and wires.

No effluvia can escape into the dwelling, as the flush is perfect and instantaneous.

It is free from noise during the flushing operation. And any desired quantity of water can be used in flushing, so that in situations where water is scarce the expenditure can be economised.

May be seen in ACTION at the EXHIBITION of BUILDING MATERIALS, open at the GALLERIES of the ARCHITECTURAL EXHIBITION, 9, Conduit-street, Regent-street, London. Free.

All information respecting the above will be given by Mr. MOODY, the Curator, at the Galleries.

HEWETT, ALLOTT, and WALKER, SHEFFIELD,
SOLE PROPRIETORS AND MANUFACTURERS.

PRIZE MEDAL, CLASS 2.

HIGH-PRESSURE VALVE COCKS.—LAMBERT'S PATENT.

These Cocks have, during the last five years, been extensively and most successfully used in many towns under continuous high pressure, varying from 100 to 350 feet; their efficiency and durability is by experience established.

The Equilibrium Ball-valve is simple and certain in its action and is cheaper than the common Cocks now in use.

Enamelled Iron, Self-acting, and other Closets, upon economic arrangements, suitable for public buildings, cottages, asylums, &c.

THOMAS LAMBERT and SON,
Brass and Iron Founders, Short-street, New-cut, Lambeth.

ENCOURAGE COUNTRY MANUFACTURE.

CLIFF'S SALT-GLAZED DRAIN-PIPES are the strongest in the London Market.

CLIFF'S STONEWARE SOCKETED PIPES are the best GLAZED in the Trade,

A HANDSOME DISCOUNT IS GIVEN,

and a good article supplied. The largest Pipes in the Kingdom are made by JOSEPH CLIFF, at the Manufactory, Wortley Fire-brick Works, near Leeds. Net price per foot, socketed:—

36-inch.	3 ft. by 2 feet (oval).	30-inch.	2 ft. 6 in. by 1 ft. 9 in.
11s.	9s. 3d.	8s. 6d.	5s. 6d.
24-inch.	2 ft. by 1 ft. 6 inches	18-inch.	15-inch.
5s.	4s. 3d.	3s.	2s. per foot.

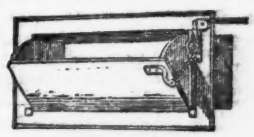
The thickness of each Pipe is commensurate with its diameter.

Connection can be made with the sewer at any time.

And the Pipes guaranteed to stand better than any Brickwork.

VENTILATION—PURE AIR.

Sheringham's Ventilator for the admission of Pure Air through an



EXTERNAL WALL.

With single pulley, from 6s. each; with leading pulley, from 6s. 6d.

These Ventilators are arranged so that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants; and as they are placed in the external wall, their action is not impeded when the house is closed for the evening, at which time a constant supply of fresh air is most required.—HAYWARD, BROTHERS, sole Manufacturers, 117 and 118, Union-street, Borough, London; and of all respectable Ironmongers, Builders, &c.

SALES BY AUCTION.

ST. JOHN'S-HILL, BATTERSEA-RISE.—Eleven acres of valuable Freehold Building Land, possessing a frontage of 630 feet to the road, which connects the town of Battersea with the Wandsworth-road (near the Common), and midway between the Clapham-common Station on the South-Western Railway, and the Battersea Steamboat Pier.

MESSRS. RUSHWORTH & JARVIS will SELL by AUCTION, at the MART, on FRIDAY, MAY 4, at TWELVE, in one lot, ELEVEN ACRES of FREEHOLD BUILDING LAND, formerly the property of Earl Spencer, and for very many years past occupied as a nursery ground, and possessing an extensive frontage to a capital broad road, leading into Battersea, known as Plough-lane, and nearly opposite the elegant Tudor residence of Joseph Tritton, Esq. near the line of the Richmond Railway; it contains rich garden mould from two to three feet in depth, with a substratum of sand suitable for building purposes. The property is a very short distance from Battersea Old Church, not far from the New Church, and being surrounded by a daily increasing neighbourhood possesses great attractions for extensive building operations; it is also well adapted for a public institution, being readily approached by the road, railway, and from within a short drive of the West-end of the metropolis. There is a genteel modern cottage at present standing on the property, let to a respectable tenant till Midsummer next at 40*l.* per annum, a short distance from which is a range of timber and tiled outbuildings.—Particulars with plans may be obtained fourteen days prior to the sale of Messrs. EYSTON & MILLS, 1, Gray's-inn-square, W.C.; and of Messrs. RUSHWORTH & JARVIS, Auctioneers and Surveyors, Saville-row, Regent-street, W.; and 19, Change-alley, Cornhill, E.C.

EUSTON-ROAD.—Valuable Manufactured Stock of Marble Chimney-pieces, Monuments, Table-tops, and other contents of the Show-rooms, Office Fittings, &c.

MESSRS. EVERSFIELD & HORNE are instructed by the Assignees to SELL by AUCTION, on the PREMISES, 135, Euston-road, St. Pancras, on WEDNESDAY, APRIL 4th, at TEN for ELEVEN, on account of the number of lots, the valuable manufactured portion of the STOCK: comprising 60 chimney-pieces, including one of massive design and richly sculptured in statuary, inlaid with Brocatella, suitable for a mansion, and the remainder executed in a superior manner, in the following variety of marbles, viz.:—statuary, Sienna, dove, Bardilla, black, St. Ann's, black and gold, Brocatella, Rouge Royale, Griotte, vein, Sicilian, and various French and English marbles; also, a variety of marble table-tops and wash-stands, two marble baths, life-size figure of "Faith," colossal marble bust of Nelson, 140 marble mortars, of various sizes; two pair of Bardiglio vases, of large sizes; Scagliola pedestals, plaster figures and casts, artificial stone tazzas, pedestals, and figures; Norman cross, 8 feet high, in Caen stone; Gothic Caen stone font, two handsome Caen stone monuments; marble, granite, and other head-stones; polished Aberdeen granite pedestal, with shaft 12 feet high; a quantity of marble shelves and useful pieces; crab-engine, jib-crane, and chain fall; also, the office furniture, consisting of mahogany writing-tables and slopes, birch chairs, 8-day French clock, in marble case; Chubbs' fire-proof safe, maps, framed prints and pictures, specimens, &c.—May be viewed two days previous; and catalogues may be had at the Offices of WM. PENNELL, Esq. Official Assignee, 1, Guildhall-chambers, Basinghall-street; of J. R. CHIDLEY, Esq. Solicitor, 10, Basinghall-street; on the Premises; and of the Auctioneers, 40, Parliament-street, or Coal Exchange.

N.B. The unmanufactured portion at Great Northern Wharf will be sold shortly.

PERIODICAL SALE.—To MARBLE MASONS, BUILDERS, and OTHERS.—Recent Consignment of SICILIAN MARBLE.

MESSRS. EVERSFIELD & HORNE are instructed to SELL by AUCTION, at Bridge Wharf, Millbank, foot of Vauxhall-bridge, on FRIDAY, APRIL 13th, about 50 blocks of Sicilian Marble, recently consigned; also several thousand feet of English sawn slab.—May be viewed two days previous, and catalogues had on the Premises, and of the Auctioneers, 40, Parliament street.—N.B. Approved bills at six and four months.

KING'S-CROSS.—Unmanufactured Stock of Stone and Marble, Carts, Stone Trucks, and Trade Utensils.

MESSRS. EVERSFIELD & HORNE are instructed by the Assignees to SELL by AUCTION, on the PREMISES, Great Northern Wharf, Canal-road, King's-cross, on WEDNESDAY, APRIL 18th, at TEN for ELEVEN, on account of the number of lots, the UNMANUFACTURED PORTION of the STOCK; comprising Statuary, Sicilian, and Coloured Marble in Block and Slab (including several bust blocks), Portland Stone, York Coping, Steps, Cills, and Sinks, Sawn Robinhood Slab, Headstones, Landings, and Grindstones. Also the Trade Utensils, comprising three stone trucks, two hand trucks, two rubbish carts, light spring cart, low-bodied slab cart on springs, two hoisting jacks, half a ton of saw-plates, saw poles and frames, masons' bankers, office fittings, marble mortars, and other effects.—May be viewed two days previously, and catalogues had on the Premises; and also of W. PENNELL, Esq. Official Assignee, 3, Guildhall-chambers; of J. R. CHIDLY, Esq. Solicitor, 10, Basinghall-street; and of the Auctioneers, No. 40, Parliament-street; or Coal Exchange.

TO BUILDERS and OTHERS.—HACKNEY.—800,000 good sound FRONT, STOCK, and PLACE BRICKS, sorted and arranged in convenient Lots of from Ten to Thirty Thousand each, TO BE SOLD by AUCTION, by

MR. MATTHEWS, on the GROUND, AMHURST ROAD, near the Railway Station, Hackney, on THURSDAY, APRIL the 12th, 1860, at TWELVE o'clock.—May be viewed until the sale, and catalogues had one week previously at the Pembury Tavern, (opposite the Field); the Manor Offices, Church-street, Hackney; and at Mr. MATTHEWS'S Offices, Finsbury Pantechnicon, 21, City-road.

IN CHANCERY.—BRUNE *v.* COLLINS.

TO BE SOLD by PUBLIC AUCTION, pursuant to an order of the High Court of Chancery made in the above cause, with the approbation of the judge to whose court the said cause is attached, about 1,000 OAK, and 15 ASH and other TREES, part whereof consists of 460 oak trees, now growing in the wood called West Down Wood; other part thereof of 123 oak trees, now growing in the wood called Washing Place Wood; other part thereof of 395 oak trees, now growing in the wood called Rouse Wood; other part thereof of 50 oak, 12 ash, 1 cherry, and 2 chestnut trees, now growing on the farm called Rouse Farm; which farms and woods are situate in the parishes of Pilleton and St. Millian, in the county of Cornwall, all of which timber is of mature growth, and of very superior quality, and a large portion of the oak is well adapted for dockyard and other purposes, by Mr. J. C. JOHNS, at the ROYAL OAK Public-house, in the church town of the parish of Pellaton, in the county of Cornwall, on WEDNESDAY, the 4th day of APRIL, 1860, at TWELVE of the clock at noon.—Printed particulars and conditions of sale may be had (gratis) in London, of Messrs. COODE, KINGDON, & COTTON, 10, King's-arms-yard, Moorgate-street, Solicitors; at St. Austell, of Messrs. COODE, SHILSON, & CO. Solicitors; at St. Columb, of Mr. G. B. COLLINS, Solicitor; at Newton Park, near Callington, of Mr. SPRY; of Mr. J. C. JOHNS, the Auctioneer; and at the said Inn.

GEO. WHITING, Chief Clerk.
COODE, KINGDON, & COTTON,
10, King's-arms-yard, Moorgate-street,
Agents for Messrs. COODE, SHILSON, & CO. St. Austell, Cornwall, Plaintiff's Solicitors; and for Mr. G. B. COLLINS, St. Columb, Cornwall, Defendant's Solicitor.

TO BUILDERS AND QUARRY MASTERS.—Valuable Freestone Quarry, near Box, Wilts.—TO BE SOLD by AUCTION, by

MESSRS. PARRY & SON, at CORSHAM, WILTS, on TUESDAY, the 17th of APRIL, a commodious RESIDENCE, and Eighteen Acres of LAND, with a valuable bed of Freestone underlying, large workshops fitted with machinery, and farm buildings.—Apply to Mr. T. ABDY FELLOWES, Solicitor, Chippenham, Wilts.

Important SALE of Oak and Elm TIMBER, in the parishes of Farningham, Eynsford, Shoreham, Orpington, Farnborough, Kingsdown, Horton, and Hartley, in the county of Kent.

MR. WILLIAM HODSOLL will SELL by AUCTION, at the LION HOTEL, Farningham, on THURSDAY, APRIL 12th, 1860, at TWO o'clock, about 750 very superior OAK TIMBER TREES (including many of large metings), and 400 Oak Tellers, together with their lop, top, and bark, now standing and growing in the above-named parishes; also seventy-nine Elm Trees, mostly of very large dimensions; two Ash and fifty Beech. The timber may be viewed and catalogues had, eight days previously, at the Inns in the above parishes, and of the Auctioneers, Farningham, Kent.

By order of the Executors.—Important to Scientific Institutions, Mathematical, Philosophical, and Optical Instrument Makers, and others in pursuit of service.—Four Days' Sale of the valuable and extensive stock of Astronomical Telescopes, Transit and Surveying Instruments, Regulators, Pneumatic, Electric, and Optical Instruments of every description.

MR. W. F. HAMMOND has received instructions to SELL by AUCTION, on the 30th day of APRIL next, and three following days, on the PREMISES, No. 30, Holborn, nearly opposite Furnival's Inn, the entire valuable STOCK of the late W. & S. Jones, who for so many years have maintained a distinguished European reputation for the superiority of their scientific instruments. The stock consists of two magnificent 8 feet 6 inch and 7 feet 6 inch astronomical telescopes, equatorially mounted, with 6-inch aperture; several large reflectors, with beautifully-marked speculums, and a large variety of others of a smaller size; a valuable orrery (silver-mounted); a 2 feet 9 inch astronomical transit, with 2¾-inch aperture; also a variety of others of a smaller class; several first-rate astronomical regulators, with mercurial pendulums, by Barraud, Molyneux, and other eminent makers, beautifully finished working models of locomotive and stationary steam-engines, water-wheels, cranes, &c.; several large and extensive plate and cylinder electrical machines, with experimental apparatus of every kind; double-barrelled air-pumps, with receivers, transferring plates, hemispheres, &c.; a variety of altitude and azimuth instruments of all sizes, beautifully divided on silver, sets of mechanical powers, silver universal sun-dial, and a large assortment in brass for every known latitude; surveying instruments, consisting of theodolites, levels, pocket sextants, mining dials and circumferenters, azimuth compasses, optical squares; also some very valuable cases of drawing instruments, gold and silver spectacles, &c.—On view two days previous and mornings of sale. Catalogues 6d. each. The commanding and extensive business premises will be submitted at the sale upon the conditions of a lease for 21 years.—Auction and Estate Agency Offices, 3, Carey-street, Lincoln's-Inn, W.C.

TO TIMBER MERCHANTS, BARGE BUILDERS, BOAT BUILDERS, HARDWOOD DEALERS, AND OTHERS.

MESSRS. ELLIS & POOLE have received instructions to SELL by PUBLIC AUCTION, at the MARSHAL KEATE TAVERN, Preston-road, Poplar (close to Collier Dock), on THURSDAY, the 5th APRIL, 1860, at TWELVE for ONE o'clock precisely, about 150 loads of OAK, and 80 loads of ASH, ELM, and BEECH. The above are lying at Collier Dock, Poplar. Also, 30 pieces of oak, at the waste ground opposite the Waterman's Arms, Millwall. On view two days previous and morning of sale, and catalogues obtained at the Place of Sale; and of ELLIS & POOLE, Auctioneers, 37 and 38, Mark-lane.

600,000 Bricks, close to a Railway Siding, Romford.

MESSRS. HUMPHREYS & WALLEN will SELL by AUCTION, in the BRICKYARD, adjoining Hare Hall, near Romford, on TUESDAY, APRIL 17th, at TWELVE o'clock, in convenient lots, about 600 000 STOCK, WASHED and PICKED STOCK FACINGS, and PLACE BRICKS, of good quality. Also a large quantity of rough bricks and bats. The above lie within a quarter of a mile from a siding on the Eastern Counties, Colchester line. Approved bills will be taken from purchasers of 50*l.* and upwards. — Catalogues seven days before the sale, of Messrs. HUMPHREYS & WALLEN, 68, Old Broad-street, London, E.C.; and Romford, Essex.

TO TIMBER MERCHANTS, BUILDERS, AND OTHERS.—Extensive Sale of NEW TIMBER and DEALS, Regent-street, Westminster; comprising about 300 feet dry Honduras mahogany plank, 200 squares ¾ and ⅞ prepared yellow and white flooring boards and battens, 100 squares of 1-inch and 1¼ ditto ditto. 5,000 feet of wide pine boards, 4,000 feet of long yellow and white quartering, 1,000 long yellow and white battens, 500 yellow and white deals (whole), 500 ditto and pine planks, 500 ditto ditto, cut various, dry walnut-tree plank, oak plank, &c. &c. which will be SOLD by AUCTION, by

MESSRS. F. HALL & SON, on WEDNESDAY, APRIL 4th, 1860, at TWELVE o'clock, on the PREMISES, adjoining the Telegraph, Regent-street, Westminster. Also, about 120 fathoms of new firewood, in deal ends, in lots to suit all purchasers, from one fathom and upwards, new marble chimney-piece, and other effects.—May be viewed; catalogues obtained on the Premises, and (per post), of the Auctioneers, Kennington, S.

2,000,000 Bricks, and some Brickmaking Implements, Denham, Bucks.

MESSRS. HERON & SONS have received instructions from B. H. W. Way, esq. to SELL by AUCTION, on the PREMISES, at the Brickfield, Denham, on WEDNESDAY, APRIL 11th, 1860, at TWO for THREE o'clock, in lots, about 2,000 000 of BRICKS; consisting of stocks, grizzles, place, &c.; also about six boat loads of bats, and a quantity of brickmaking implements. The field is situate near the London turnpike road, and about one mile from the Grand Junction Canal; and builders contractors, and others will find the above well worthy their attention.—Catalogues may be had of Messrs. HERON & SONS, Auctioneers and Valuers, 40, Mark-lane, London, E.C. and Uxbridge, Middlesex.

TO TIMBER DEALERS, CONTRACTORS, &c.—Capital Navy Timber Tidmarsh and Ashhampstead, Berks, six miles from Reading.

MR W. BROWN is instructed by John Hopkins, esq. to SELL by AUCTION, at the GEORGE INN, Pangbourn, on WEDNESDAY, the 4th day of APRIL, at HALF-PAST THREE precisely, 340 OAK TREES (many of them of large dimensions, and suitable for ship or dock purposes), with the top, lop, and bark, and NINE large felled ASH. This timber is well worthy of notice, being of well-known fine quality, well situate for removal, and within an easy distance of Pangbourn, whence is conveyance by river or rail to all parts. Liberal credit will be given on approved security. Catalogues forwarded, on application to the Auctioneer, 154, Friar-street, Reading.

VALUABLE FREEHOLD LAND, Upper Holloway, near the Archway Tavern.—TO BE SOLD or LET, on Building Lease, for 99 years, direct from the freeholder, a piece of valuable LAND, near St. John's-road Villas, having a frontage to an intended new street of about 480 feet, averaging in depth 112 feet. The party taking this land may build thereon an inn or tavern, a privilege not granted to the owners who have purchased the adjoining land.—A plan may be seen, and further particulars known, on application to Messrs. DENT & SON, Surveyors, 24, Great James-street, Bedford-row.

BUILDING GROUND.—BUSINESS PREMISES TO LET.—The former by a station near London, for villas,—advances if required;—the latter, in the centre of the metropolis, for any business requiring space, light, and publicity.—Apply to W. MUMFORD, Esq. Architect, 21, Lincoln's-inn-fields.

GUILDHALL, London, March 28, 1860.—The Committee for Letting the Bridge House Estates will meet at Guildhall, on FRIDAY, the 13th APRIL next, at ONE o'clock precisely, to receive PROPOSALS for LEASES, for twenty-one years, of several HOUSES in the Bermondsey New-road, in the county of Surrey; and also in Noel-street and Potier's-place, Bermondsey New-road aforesaid.—Plans of the property, and conditions for letting, may be seen at the Architect's Office, Guildhall.

FERDINAND BRAND, Comptroller.

GUILDHALL, March 29th, 1860.—The Committee for Letting the City's Lands will meet at the GUILDHALL, on WEDNESDAY, the 18th APRIL next, at ONE o'clock precisely, to receive PROPOSALS for BUILDING LEASES of FOUR PLOTS of GROUND on the east side of Jewry-street, and the south side of High-street, Aldgate, in the City of London. And for REPAIRING LEASES of TWO HOUSES, Nos. 1 and 2, Chiswell-street, Finsbury; and TWO HOUSES, Nos. 9 and 10, Butcher-row, Ratcliffe. Plans of the property may be seen, and forms of Tender obtained, upon application at the Architect's Office, Guildhall.

FERDINAND BRAND, Comptroller.

TO BUILDERS and OTHERS.—TO BE LET, on a building lease, a PLOT of GROUND, situate on the west side of Great New-street, on the south side of West Harding-street, Fetter-lane, and the north side of Trinity-court; admirably adapted for workshops where much light is required. A plan of the ground may be seen and other particulars obtained at Mr. HARDWICK'S Office, No. 1, Henrietta-street, Cavendish-square.

Goldsmiths' Hall, March 26, 1860.

TO BE LET, for such a number of years as may be agreed on, entry at 15th NOVEMBER next, CRAIGLEITH QUARRY, with the dwelling-house, park, and garden, stabling for eighteen horses, and workmen's houses (with or without the arable land), as possessed by Mr. Johnston. This well-known quarry is within two miles of Edinburgh; and from the superior quality of the stone has always commanded a large local sale, and been extensively used in buildings in London, Liverpool, and other places in England. It is believed that a siding will be got on the Granton Branch of the Caledonian Railway in the immediate vicinity. Every encouragement will be given to an enterprising tenant.—Mr. M'INTOSH, clerk at the Quarry, will show the premises; and for all further information, apply to Mr. WHITTIT, Whitehouse, Cramond, Edinburgh.—February 25, 1860.

LAND to LET, on Building Lease, with river frontage of about 400 feet, by 600 feet in depth, suitable for manufactories.—Apply at Thames Soap Works, East Greenwich, S.E.

TO MANAGERS OF PUBLIC INSTITUTIONS, ENGINEERS, SEED CRUSHERS, AGRICULTURAL CHEMISTS, CONTRACTORS, MANUFACTURERS, AND OTHERS.

THE BEDFORD COUNTY LUNATIC ASYLUM, standing upon nearly 10 acres of land, for SALE, by PRIVATE CONTRACT, being about to be given up in consequence of the erection of a new Asylum.—The Bedford Asylum consists of a centre building, 166 feet in length, a residence, two wings of two stories, about 230 feet in length, together with wash-houses, laundries, &c. &c.; the whole built in the most substantial manner and of the best materials. There are also extensive airing courts surrounded by brick walls, farm buildings, piggeries, and workshops. The land is Freehold, land-tax redeemed, and tithe-free, and comprises 9 acres, 2 roods, and 12 perches, and is bounded by the turnpike road from Bedford to Woburn, and the London and North Western Railway, close to its junction with the Midland Railway, and is distant from Bedford less than one mile. There is a good supply of water, the soil is gravel, and possession may be had on the 5th of April, 1860. To parties requiring extensive premises, easy of adaptation for any purpose where light and strength are required, coupled with an area of nearly 10 acres, in close proximity to a county town, with the advantage of two railways, the foregoing offers an opportunity which seldom occurs. — Further particulars may be known on application to Mr. WING, St. Cuthbert's-street, Bedford; and at the Offices of Messrs. FAREBROTHER, CLARK, & LYE, No. 6, Lancaster-place, Strand, London, W.C.

SAW-MILLS, with Timber-Yard and Wharf, TO BE SOLD or LET, on lease, on the banks of the Thames, above bridge, with 15 feet depth of water at high tide. The machinery is all modern, and of the first class, principally by Messrs. Easton & Amos, including a double cylinder steam beam-engine, of 25-horse power, with flue boiler; a timber frame, a deep plank frame, three deal frames (two by Parsons); self-acting saw bench, large cast-iron tank, overhead and wharf cranes, a convenient dwelling-house, and offices, spacious timber-yard, with piling stages, and excellent wharf.—Apply to Messrs. FULLER & HORSEY, Billiter-street, E.C.

BUILDING GROUND TO BE LET, near the King's-road, Chelsea, at a low ground-rent, for a term of upwards of eighty years, upon which may be erected seven houses.—For particulars apply to Mr. G. WALKER, 12, Gray's-inn-square.

WIMBLEDON.—FREEHOLD LAND.—TO BE SOLD, several PLOTS, situate on an eminence, about ten minutes' walk from the Railway Station, adapted for the erection of detached or semi-detached residences, on a dry gravelly soil, well drained.—For terms, apply to Mr. DANIEL MASON, Land and Estate Agent, Wimbledon.

HIGHGATE.—FREEHOLD LAND TO LET, on Building Lease, for 99 years, land-tax redeemed. Six Frontages, 25 feet each, by 100 feet. The adjoining land is built upon, and the houses tenanted. Money advanced to a builder if required. Hargrave-park-road, Junction-road, Highgate.—Apply to JOHN PENDERGAST Esq. Solic tor. 37, Colet-place, Commercial-road East; or to Mr. J. E. CRANEY, No. 52, Fore-street, City, E.C.

EXTENSIVE PREMISES TO LET, with STEAM POWER, consisting of large yard, workshops, and dwelling-house, having been used and fitted up for the sawing of timber and box-making, and suitable for a saw-mill or builder.—Apply at 5, Earl-street, London-road, Southwark.

TO BRICKMAKERS, BUILDERS, RAILWAY CONTRACTORS, and OTHERS.—TO BE LET, on advantageous terms, a BRICKFIELD, situate on the Northern side of London, with every accommodation for a large make, and for obtaining chalk and breeze, and for delivering the bricks in town.—For further particulars apply to Mr. GEORGE THOMAS WOODROOFFE, 1, New-square, Lincoln's-inn

TO BE LET, at Newington Butts, a WAREHOUSE and MANUFACTORY, with steam power (8 horse), and DWELLING-HOUSE; also, close thereto, a large WAREHOUSE and MANUFACTORY, with small DWELLING-HOUSE, and large Yard, covering an acre of about 1,600 yards, suitable for a builder, machinist, or other extensive works.—Apply to Mr. BROWN, 8, High-street, Newington Butts; or 4, Adams-court, Old Broad-street, E.C.

TO CAPITALISTS, CONTRACTORS, BUILDERS, and OTHERS.—HULL GLASS WORKS.—These valuable PREMISES, covering a superficial area of 8,000 square yards and upwards, with a water frontage and right of wharfage to the River Hull, and contiguous to the North-Eastern Railway, embracing, with the site of the works, SEVEN ACRES of valuable freehold BUILDING LAND, having been purchased of the company, the owner is prepared to DISPOSE thereof by PRIVATE CONTRACT, either in one or more lots, according to requirement. The buildings and erections were constructed in an extraordinarily substantial manner, without regard to expense, and they are for the most part fireproof. They contain about 5,000,0000 of bricks, of which a considerable portion are fire-bricks; a large quantity of stone of the best quality; valuable timber; a quantity of lead, and upwards of 400 tons of iron, consisting of columns, girders, and roofing. There is also a small steam-engine upon the works. The premises, as they at present stand, afford every facility for conducting the manufacture of glass, and at very little expense may be applied to other manufacturing purposes. The property would form an excellent site for a locomotive establishment, or for a railway depot. The site is likewise admirably adapted for a new gaol. The owner is prepared to receive Tenders for the Purchase of the Materials of which the premises are composed, either in one or more lots, such Tender to include the cost of pulling down and removal by the parties tendering. Tenders will be received, and any further information afforded, by DAVID THORP, 22, Coltman-street, Hull.

LAND for BUILDING, in the City, Coleman-street, near the Bank of England.—TO BE LET, on a Building Lease, for a term of 84 years, a highly eligible PLOT of LAND, containing an area of about 6,000 feet, situate in White Horse-yard, on the west side of Coleman-street, the property of the parish of St. Stephen, Coleman-street. A plan of the site may be seen on application at the Offices of Mr. THOMAS JONES, Solicitor, No. 1, King's Arms-yard, Coleman-street; or at the Offices of Mr. JOHN GRIFFITH, Architect, No. 16, Finsbury-place, South Finsbury.—Tenders for the above are to be delivered at the Offices of Mr. JONES, on or before the 19th day of APRIL next.—N.B. The Feoffees of the Parish do not bind themselves to accept either the lowest or any Tender.

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